Department of the Air Force
Travis Air Force Base
60 Civil Engineer Squadron
411 Airmen Drive
Travis AFB, California 94535

December 2005

Environmental Assessment for the
South Gate Improvement Project

AFCEE Contract No.: F41 624-03-D-8605 Task Order No.: 5M01

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Environmental Assessment for the South Gate Improvement Project Travis Air Force Base Solano County, California

AFCEE Contract No: F41625-05-D-8605
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December 2005

DEPARTMENT OF THE AIR FORCE
TRAVIS AIR FORCE BASE
60 Civil Engineer Squadron
411 Airmen Drive
Travis AFB, California 94535

Cover Sheet

Environmental Assessment for the
South Gate Improvement Project

Lead Agency: Department of the Air Force

Proposed Action: Improvements to South Gate entrance at Travis Air Force Base (AFB) and associated acquisition of 12.4 acres of land.

Written comments and inquiries regarding this document should be directed to:
Capt. Jeremiah Frost, 60 CES/CEVP, Travis AFB, and California 94535, (707)424-7517.

Report Designation: Environmental Assessment (EA)

Abstract: The 60th Air Mobility Wing (AMW) proposes infrastructure improvements and associated land acquisition at the South Gate entrance to Travis AFB, Solano County, California. The total proposed land acquisition is 12.4 acres of land; however, the area of potential impact due to construction-related improvements to the South Gate entrance will be less than the total property acquired.

The primary mission of Travis AFB is to provide rapid, responsive, reliable airlift of forces and assets in support of Department of Defense global objectives and activities. The base is located midway between Sacramento and San Francisco in northern California, off Interstate 80. Currently, the South Gate entrance is used only for commercial traffic and inbound traffic ~~only~~. In addition, there are no facilities for inspection of vehicles without stopping other traffic.

With proposed land acquisitions and improvements, Travis AFB would be able to open the South Gate to inbound and outbound traffic, allow for inspection of trucks and commercial vehicles, simultaneously with privately owned vehicles (POVs), and allow for more regional access to the base while decreasing the overall gate traffic congestion at the base. In addition, the proposed action would upgrade the gate access point at the southern end of Travis AFB. These upgrades will allow compliance with ECF and additional requirements associated with Air Force Manual 91-201 "Explosives Safety Standards."

This EA describes the proposed alternative (Alternative 1), the acquisition and associated improvements to the South Gate entrance, and a no-action alternative. The EA assesses potential impacts from each alternative to land use; socioeconomics; traffic and transportation; air quality; noise; hazardous materials and waste management; water resources; biological resources; cultural resources; and geology and soils.

The EA demonstrates that there will be some temporary, short-term impacts associated primarily with construction-related activities under air quality, noise, hazardous materials and waste management, transportation and environmental management (i.e., pollution prevention, geology and soils). Socioeconomics, cultural, and land use resource areas would experience no significant impact.

There is the potential for long-term impacts to water and biological resource areas from construction-related activities. These include temporary disturbance to banks and sedimentation due to storm water run-off and the permanent impact to 0.178 acre where culverts and fill will be installed to allow for the realignment of Peterson Road. The installation of these culverts and associated paved areas could indirectly impact the California tiger salamander (CTS) due to the loss of potential habitat. However, this is not in an area deemed critical CTS habitat by the USFWS. Mitigation measures would be taken to limit any potential impacts to water and biological resources during and post construction.

FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment for the South Gate Improvement Project

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INTRODUCTION

The 60th Air Mobility Wing (AMW) proposes infrastructure and associated land acquisition at the South Gate entrance to Travis Air Force Base (AFB) in Solano County, California. Travis AFB is an Air Mobility Command (AMC) installation, whose primary mission is to provide rapid, responsive, reliable airlift of forces and assets in support of United States Department of Defense (DoD) global objectives and activities. Currently, the South Gate entrance to Travis AFB is utilized for commercial vehicles, vendors, and contractors, however, the entrance does not meet several mandatory security and safety specifications for military facilities. The proposed upgrades would involve the relocation outside the Q-D Arc in addition to increased lighting and inspection facilities to adequately maintain the proper level of security and inspection of vehicles entering the base on a daily basis.

The Proposed Action (Alternative 1) and the No-Action Alternative (Alternative 4) were analyzed in the attached Environmental Assessment (EA) in accordance with the National Environmental Policy Act.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Improvements are needed to the South Gate entrance in order to comply with the Air Force Manual 91-201 "Explosives Safety Standards" and AMC Entry Control Facility (ECF) Guidelines, dated February 2002. The existing South Gate entrance was designed to control entry under Force Protection Condition (FPCON), normal and alpha conditions. New requirements, established in 2001, require entry control facilities (ECFs) to operate at higher levels of security, including extended periods in FPCON Bravo.

Currently, commercial vehicles, vendors, and contractors use the South Gate entrance during the morning hours, utilizing one inbound lane and one outbound lane that are operated daily from 0600 to 1800 hours. Improvements to the existing South Gate entrance will address off-street parking for commercial trucks; ensure adequate lighting is available to perform vehicle inspections; and provide a turnaround for vehicles prior to gate entrance. In addition, the proposed project will help address traffic congestion at entry points at all gates at Travis AFB and provide for future mission flexibility with respect to any future increases in personnel and traffic generation.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The Proposed Action (Alternative 1) relocates the South Gate outside the Q-D Arc and provides expanded inspection facilities with improved lighting and turn around capabilities prior to entering Travis AFB. Alternative 1 would be constructed in two phases: 1) relocation of commercial vehicle inspection to the South Gate entrance; and 2) construction of the privately owned vehicle (POV) facilities at the South Gate entrance.

The real property proposed for acquisition is located outside the base fence line near the southwest corner of Travis AFB (Township 5 North, Range 1 West, Sections 33 and 34). The parcel is approximately 12.4 acres and parallels the south side of Peterson Road, which leads to the South Gate entrance.

NO-ACTION ALTERNATIVE

The No-Action Alternative would include increased control and warning systems, but would not involve gate relocation and roadway realignment. Specific features of this alternative include a gate and/or barrier control with a signal system at the approaches to the taxiway crossing; bollards on the taxiway outside the "roadway clear zone" and passive delineation; a system to warn of approaching aircraft; and a reactive detection system in addition to monitoring by security forces and/or South Gate personnel. Even though this alternative would offer ways to reduce manpower requirements from current levels while achieving the same or greater level or security and still maintain minimum mission requirements, it would not address critical needs of Travis AFB with respect to other traffic, security, and safety issues noted under purpose and need.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

As part of the NEPA process, reasonable alternatives to the Proposed Action must be considered.

Alternative 2 – Proposes to relocate commercial access to a new ECF and roadway that connects Air Base Parkway (near Peabody) to Hickman Avenue. This alternative would provide alternative access to the Hickam Avenue corridor, which is a destination for some commercial vehicles. The alternative would comply with portions of the purpose and need as defined; however, Alternative 2 would not allow phasing of overall improvements because gate and roadway improvements would be needed before usage could occur. In addition, other limitations of the alternative would be the impact to traffic operations at Air Base Parkway and Peabody, and the lack of regional access, because all access points are located in the northwest corner of the base.

Alternative 3 – Proposes the relocation of commercial access to a new ECF and roadway that connects Walters Road (near the railroad crossing) to Hickam Avenue. This alternative would provide access to the Hickam Avenue corridor, which is a destination for some commercial vehicles. This alternative would address portions of the purpose and need as defined; however, not allow phasing of overall improvements because gate and roadway improvements would be needed before usage could occur. In addition, the alternative would impact traffic operations along Walters Road, south of Air Base Parkway, and would not provide regional access because all access points are located in the northwest corner of the base.

ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The analysis performed and presented in the EA addressed the potential effects on land use, socioeconomics, traffic and transportation, air quality, noise, hazardous materials and waste management, water resources, biological resources, cultural resources, and geology and soils. The analysis indicates that implementation of the Proposed Action (Alternative 1) would have no sig-

nificant direct, indirect, or cumulative impacts on socioeconomics, cultural, and land use resource areas.

The EA demonstrates that there will be some temporary, short-term impacts associated primarily with construction-related activities under air quality, noise, hazardous materials and waste management, and transportation and environmental management (i.e., pollution prevention, geology and soils).

There is the potential for long-term impacts to water and biological resource areas from construction-related activities. These include temporary disturbance to banks of the agricultural drainage ditch on the property and sedimentation due to storm water run-off, the permanent impact to 0.178 acre where culverts and fill would be installed to allow for the realignment of Peterson Road and the permanent impact to approximately 5.3 acres of potential non-critical upland habitat paved for facility construction that might be used by the California tiger salamander (CTS). The installation of these culverts and associated paved areas could indirectly impact the CTS due to the loss of potential habitat. However, this is not in an area deemed critical CTS habitat by the USFWS, but because Travis AFB is assuming presence of CTS, Travis AFB would formally consult with the United States Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act concerning potential project impacts to the CTS. If conservation measures for the CTS are required as a result of the consultation, Travis AFB could propose construction of a 900 foot long drainage ditch of similar design to the existing drainage ditch along the southern edge if the property. This new habitat of 0.517 acre could offset potential adverse effects to the CTS from the project. Mitigation measures would be taken to limit any potential impacts to water and biological resources during and post construction.

FINDING OF NO SIGNIFICANT IMPACT

After review of the EA prepared in accordance with the requirements of NEPA, the Council on Environmental Quality regulations, and the Environmental Impact Analysis Process, 32 Code of Federal Regulations Part 989, as amended, I have determined that the Proposed Alternative (Alternative 1), which involves the acquisition of land and the relocation and improvements to the South Gate entrance to Travis AFB, would have some minor, temporary impacts to resources areas mentioned previously and minor, permanent impacts to water and biological resource areas that could be minimized through established mitigation and approved conservation measures. Therefore, the preparation of an Environmental Impact Statement is not required. This decision has been made after taking into account all submitted requirements and is within the legal authority of the USAF.

TIMOTHY M. ZADALIS, Colonel, USAF
Vice Commander, 60th Air Mobility Wing

26 Feb 06

Date

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List of Abbreviations and Acronyms (cont.)

O_3	ozone
Pb	lead
PM_{10}	particulate matter of 10 microns or less
$PM_{2.5}$	particulate matter of 2.5 microns or less
POV	privately owned vehicle
RCRA	Resource Conservation Recovery Act
RWQCB	Regional Water Quality Control Board
SFBAAB	San Francisco Bay Area Air Basin
SIP	California State Implementation Plan
SO_2	sulfur dioxide
SWPPP	Storm Water Prevention Pollution Plan
SWRCB	State Water Resources Control Board
TSDF	Treatment Storage and Disposal Facility
USACE	United States Army Corps of Engineers
USC	United States Code
UST	underground storage tank
VOC	volatile organic compound

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Executive Summary

The 60th Air Mobility Wing proposes infrastructure improvements and associated land acquisition at the South Gate entrance to Travis Air Force Base (AFB) to address safety and security concerns, in addition to improving access and traffic flow at the base. The real property proposed for acquisition is located outside the base fence line near the southwest corner of Travis AFB. The parcel is approximately 12.4 acres, and located parallel to the south side of Peterson Road (formerly Scandia Road), which leads directly to the South Gate entrance to the base.

The primary objective of the proposed action is to upgrade the gate access point at the southern end of Travis AFB. These upgrades will allow compliance with ECF and additional requirements associated with Air Force Manual 91-201 "Explosives Safety Standards."

The Proposed Action (Alternative 1) relocates the South Gate entrance to Travis AFB outside the Q-D Arc and provides expanded inspection facilities with improved lighting and turn around capabilities prior to entering Travis AFB. The Proposed Action would be implemented in two phases:

- Phase 1: Relocation of commercial vehicle inspection to the South Gate entrance; and
- Phase 2: Construction of the privately owned vehicle (POV) facilities at the South Gate entrance.

The Proposed Action includes the acquisition of an 12.4-acre parcel of property immediately outside the existing South Gate entrance, adjacent to Travis AFB along Peterson Road. Current and historical land use of the real property has been rural, residential, and agriculture.

Potential impacts to the human and natural environment were evaluated relative to the existing environment. For each resource area, anticipated direct and indirect effects were assessed in both the short- and long-term. The implementation of the Proposed Action at Travis AFB may result in minor, temporary impacts; however, through planning and mitigation measures these are not anticipated to be signifi-

cant in magnitude or duration. The Proposed Action could result in the following consequences at Travis AFB:

- Minor, short-term adverse impacts on air quality, noise, hazardous materials, transportation, soils, and water resources as a result of construction;
- Minor, long-term adverse impacts to water resources from permanent culverts necessary for the South Gate Improvement Project;
- Minor, indirect, long-term adverse impacts to biological resources due to the permanent loss of potentially critical habitat for the California tiger salamander;
- Minor, long-term adverse impacts to paving of 5.30 acres of soil.

There would be no significant impacts to socioeconomic, cultural, or land use resources areas under the Proposed Action. The analysis contained in this EA indicates that the implementation of the Proposed Action at Travis AFB may result in minor, short-term impacts to resource areas listed previously, in addition to potential minor, long-term impacts to water and biological resources.

1 Purpose and Need for Action

1.1 Introduction

The 60th Air Mobility Wing (AMW) proposes to construct the South Gate Improvement Project (project), which involves infrastructure improvements at the South Gate entrance. In order to complete this project, Travis Air Force Base (AFB) proposes to acquire an 12.4-acre parcel of real property (APN 174-190-06) adjacent to the southwestern corner of the base and immediately south of Peterson Road (Township 5 North, Range 1 West, Sections 33 and 34). Figure 1-1 depicts the regional location of the parcel, Figure 1-2 is a vicinity map, and Figure 1-3 provides an aerial of the parcel and proposed project location. Figure 2-1 depicts the location of the parcel relative to Travis AFB.

At this time, project activities are only planned in the western, approximately a 12.4-acre area of the parcel (see Figure 1-3); however, additional activities may be planned in other areas of the parcel in the future[1]. This EA has been prepared to analyze the affected environment and potential environmental consequences associated with the acquisition of the parcel and particularly the construction of the project in accordance with the:

- National Environmental Policy Act (NEPA) of 1969, 42 United States Code (USC) 4231 et seq. as amended in 1975;
- Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) §§ 1500-1508; and
- Air Force Environmental Impact Analysis Process (EIAP), 32 CFR § 989.

Travis AFB is an Air Mobility Command (AMC) installation located in Fairfield, California. The primary mission is to provide rapid, responsive, reliable airlift of forces and assets in support of Department of Defense (DoD) global objectives and activities. The base is located midway between Sacramento and San Francisco in northern California, off Interstate 80 as shown in Figure 1-1. Travis AFB occupies 6,258 acres of land and the current personnel stationed at the base in-

[1] Travis AFB would conduct additional environmental studies and perform additional environmental impacts analysis if future activities are planned in the eastern most area of the parcel, beyond the 12.4-acre area of the South Gate Improvement project, as necessary.

clude approximately 7,260 active military, 3,770 civilians, and 4,250 reservists (Travis AFB 2005).

The South Gate entrance is currently used by commercial vehicles, vendors, and contractors entering the base during the morning hours. An average of 326 vehicles per day enters at this gate. The South Gate roadway currently has a guard station, an inbound lane, and an outbound lane, which is currently closed. The South Gate entrance is operated daily from 0600 to 1800 hours (Gannett Fleming 2004). Access to privately-owned vehicles (POVs) is currently not allowed at the South Gate.

1.2 Need for Action

The parcel proposed for acquisition is required to implement improvements needed at the South Gate entrance in order to comply with Air Force Manual 91-201 "Explosives Safety Standards" and AMC Entry Control Facility (ECF) Guidelines, dated February 2002. The South Gate entrance is currently located within a hazardous explosive zone (Q-D Arc) and must be moved to the east in order to relocate it outside of this zone.

The existing South Gate entrance was designed to control entry under Force Protection Condition (FPCON), normal and alpha conditions. New requirements, established in 2001, require ECFs to operate at higher levels of security including extended periods in FPCON Bravo. ECFs must now be configured so that security can be maintained under all FPCON conditions. In order to enhance facilities at the entrance to comply with ECF Guidelines, such as installing adequate lighting to perform vehicle inspections and providing a turnaround for vehicles prior to gate entrance, the South Gate entrance must be moved to the proposed parcel where there is sufficient area to implement the proposed improvements.

Improvements to the existing South Gate entrance will also address off-street storage for commercial trucks, will help reduce traffic congestion at entry points at all gates and improve regional access, and provide for future mission flexibility with respect to any future increases in personnel and traffic generation. Details of the proposed improvement measures are provided in Section 2.2.1.

1.3 Objectives for the Proposed Action

The primary objective of the proposed action is to upgrade the South Gate entrance access point at the southern end of Travis AFB. These upgrades will allow compliance with ECF Guidelines and requirements associated with Air Force Manual 91-201 "Explosives Safety Standards."

1.4 Scope of the EA

This EA evaluates the potential environmental impacts associated with construction of the South Gate Improvement Project (proposed action) in the western 12.4 acres of the parcel to be acquired and the no-action alternative. The short-term,

long-term, and cumulative impacts to the human and natural environment are analyzed and presented.

Relevant resources evaluated in this EA include air quality, noise, hazardous materials and waste management, water resources, biological resources, socioeconomics, cultural resources, land use, transportation systems, environmental management (including geology and soils), environmental justice, and indirect and cumulative impacts. The potential environmental effects of the proposed action would be those associated with land acquisition, construction activities, and long-term operation of the improved South Gate.

Airspace/airfield operations and safety and occupational health resources have been eliminated from detailed consideration because implementation of the proposed action or no-action alternatives would not affect them. Specifically, neither alternative would involve aircraft or airspace modifications and would not create any unique or unusual safety issues.

1.5 Decision to be Made

The 60th Air Mobility Wing Commander (60 AMW/CC) at Travis AFB will be responsible for deciding which alternative to adopt. The decision could be to implement the proposed action, prepare an Environmental Impact Statement, or choose the no-action alternative. If the no-action alternative is selected, the existing gate and inspection processes will not change. This decision will be based on findings contained in this EA.

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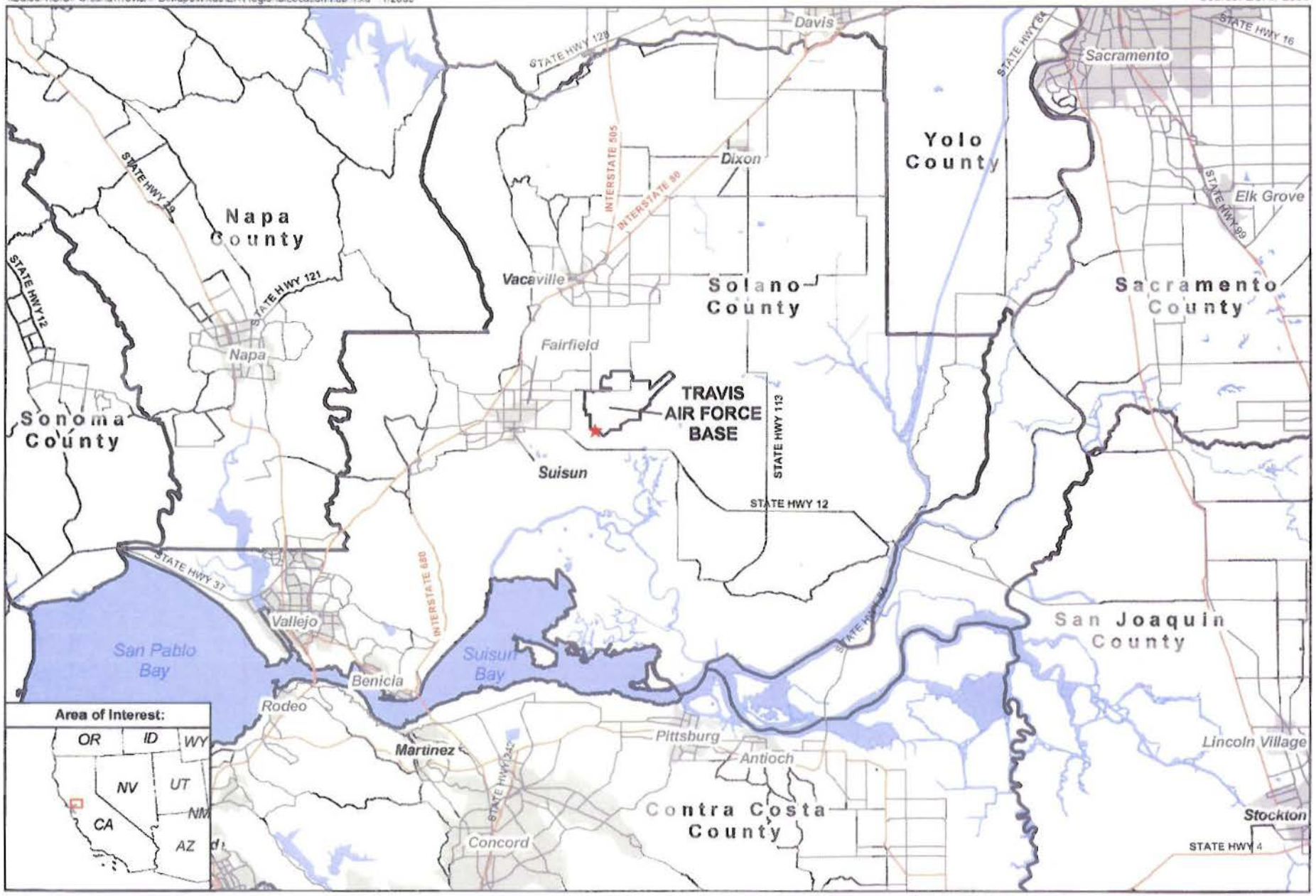

Figure 1-1
Regional Location Map
South Gate Improvement Project
Travis Air Force Base
Solano County, California

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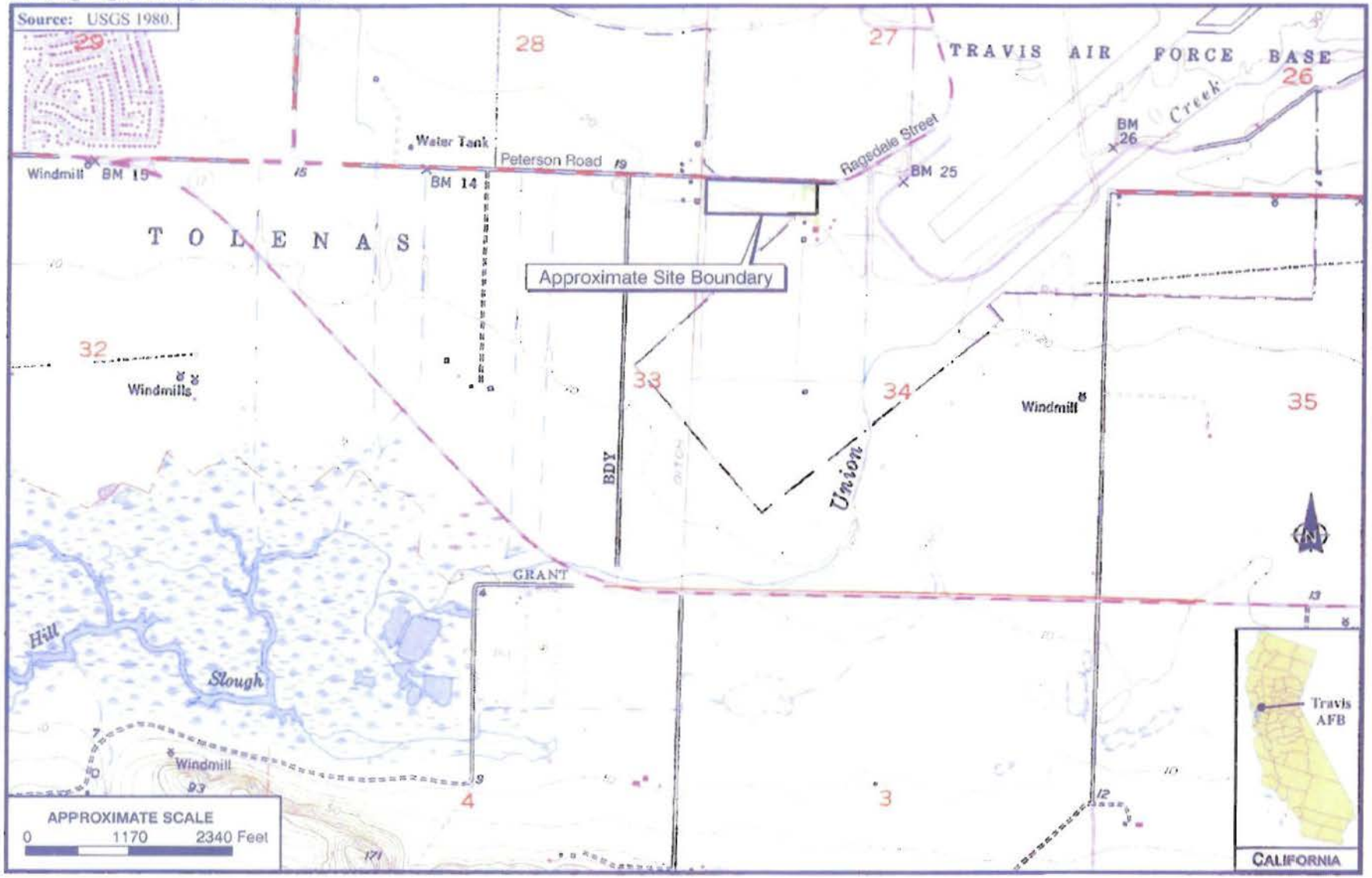

Figure 1-2
Site Vicinity Map
South Gate Improvement Project
Travis Air Force Base
Solano County, California

South Gate Improvement Project Area of Potential Impact (12.4 acres)

Proposed Land Acquisition (12.4 acres)

Figure 1-3
Aerial Photograph
South Gate Improvement Project
Travis Air Force Base
Solano County, California

1.6 Applicable Regulatory Requirements and Required Coordination

Table 1-1 lists applicable regulations, environmental permit, and regulatory agency consultation requirements for the alternatives evaluated in this EA. For each requirement, the table provides the regulatory citations, administering agency, and a brief description.

Table 1-1 Preliminary List of Required Permits, Licenses, Entitlements, and Consultations

Regulation	Agency	Permit/Consultation	Regulated Activity
Clean Air Act, 40 CFR 93	U. S. Environmental Protection Agency	Consistency Determination	Air emissions must be in compliance with the General Conformity Rule
Clean Water Act of 1977, Section 404; 33 USC § 1251-1376; 30 CFR § 330.5(1)(26)	U. S. Army Corps of Engineers	Section 404 Nationwide Permit or Individual Permit	Placement of dredged or fill materials into waters of the United States (including wetland areas).
CWA Section 401, Porter-Cologne Water Quality Control Act, California Water Code, Section 13000 et. seq, 23 CCR 3855-3861, 23 USC Section 1341	San Francisco Regional Water Quality Control Board	Section 401 Water Quality Certification	Discharges to waters of the United States.
CWA Section 402, National Pollutant Discharge Elimination System (NPDES); 40 CFR Ch. I § 122.28	San Francisco Regional Water Quality Control Board	NPDES Construction Storm water Permit	Storm water discharges associated with construction activities disturbing more than once acre of land.
Federal Endangered Species Consultation; Endangered Species Act of 1973, 16 USC § 1531 et seq.; 50 CFR Parts 17 and 222	U.S. Fish and Wildlife Service	Section 7 Consultation	Activities impacting federally listed species or their critical habitat.
California Endangered Species Act of 1984; California Fish and Game Code § 2050-2116	California Department of Fish and Game	Endangered Species Consultation	Activities impacting state-listed species or their critical habitat.
Executive Order 11988, Floodplain Management, and 11990, Protection of Wetlands	Travis AFB	NEPA and Clean Water Act - minimize impacts to floodplains and wetlands	Impacts to floodplains and wetlands be restored or preserved.
California Fish and Game Code, Sections 1600-1603	California Department of Fish and Game	1602 Streambed Alternation Agreement	Activities affecting water bodies that could have an adverse impact on existing fish and wildlife resources.

Table 1-1 Preliminary List of Required Permits, Licenses, Entitlements, and Consultations

Regulation	Agency	Permit/Consultation	Regulated Activity
Section 106 of the National Historic Preservation Act of 1966 as amended; 36 CFR 800. Archaeological and Historic Preservation Act of 1974; Archaeological Resources Protection Act of 1979; American Indian Protection and Repatriation Act of 1990.	State Historic Preservation Office Advisory Council on Historic Preservation	Section 106 Consultation	Federal actions that affect those potential or listed historic sites/properties on the National Register of Historic Places.
National Environmental Policy Act of 1969, as amended; 40 CFR 1500-1508	Travis AFB	FONSI/FONPA/EA	Evaluate impacts to the human and natural environment.

2 Description of Alternatives Including the Proposed Action

2.1 Selection Criteria for Alternatives

To be considered a viable alternative, the South Gate entrance upgrades would need to be in compliance with Air Force planning and design manuals, design standards, and requirements for security at military bases. The documents listed below provide specifications and standards applicable to the development of alternatives:

- Air Force Installation Force Protection Guide;
- Air Force Instruction (AFI) 31-101, Air Force Installation Security Program;
- Air Force Manual 91-201, Explosives Safety Standards;
- Air Force Handbook 32-1084, Facility Requirements; and
- AFI 31-209, Resource Protection Program.

Specifically, the following criteria were used to screen alternatives:

- Ability to remove traffic inspection from Q-D arc;
- Ability to provide inspection facility infrastructure meeting Air Force and DoD requirements;
- Ability to relocate commercial traffic from areas currently experiencing traffic congestion;
- Ability to meet ATFP funding requirements;
- Ability to provide another access point for emergency vehicles; and
- Ability to provide regional access for POVs.

2.2 Description of Alternatives

2.2.1 Alternative 1 – Proposed Action

The proposed action (Alternative 1) relocates the South Gate outside the Q-D Arc and provides expanded inspection facilities with improved lighting and turn around capabilities prior to entering Travis AFB. Alternative 1 would be constructed in the through the following phases:

- 1: Relocation of commercial vehicle inspection to the South Gate entrance; and
- 2: Construction of the privately owned vehicle (POV) facilities at the South Gate entrance.

Additional phases have been proposed and there is a potential for their implementation at a later date; however, they are not a part of this proposed action.

As described above, the proposed project would occur on 12.4 acres in the western portion of the real property that would be acquired (refer to Figure 1-3). Figure 2-2 provides the site development plan. Review of historical aerial photographs from 1937 to the present show the historical use of the real property as agricultural land (hay production) and rural residential. The property is not currently being used for agricultural operations. There is a rural residential home near the western boundary of the project area. Land use on the north site of Peterson Road includes Travis AFB Taxiway M and support facilities, agricultural lands, and baseball fields. The area immediately west, south, and east of the parcel is agricultural land with associated rural residential homes and outbuildings. Residential and commercial areas of the Cities of Fairfield and Suisun occur approximately 1 mile west of the project area.

The proposed action involves the paving of 5.30 acres of roadway and the realignment of Peterson Road for accessing the South Gate improvements. The project construction is proposed to begin in spring 2006 and be completed in approximately one year.

2.2.2 Alternative 2

Alternative 2 relocates commercial access to a new ECF and roadway that connects Air Base Parkway (near Peabody) to Hickam Avenue. This alternative would provide alternative access to the Hickam Avenue corridor, which is a destination for some commercial vehicles. This alternative would comply with the Q-D Arc Air Force Manual 91-201 by removing all traffic from Q-D Arc and taxiway and flight line areas. Alternative 2 requires other considerations, such as the need for directional signing for vehicles destined to Travis AFB, which could be accomplished from Interstate 80 and along Air Base Parkway. New signs would be required at the intersections of Air Base Parkway and Peabody Road and Air Base Parkway and Parker Road.

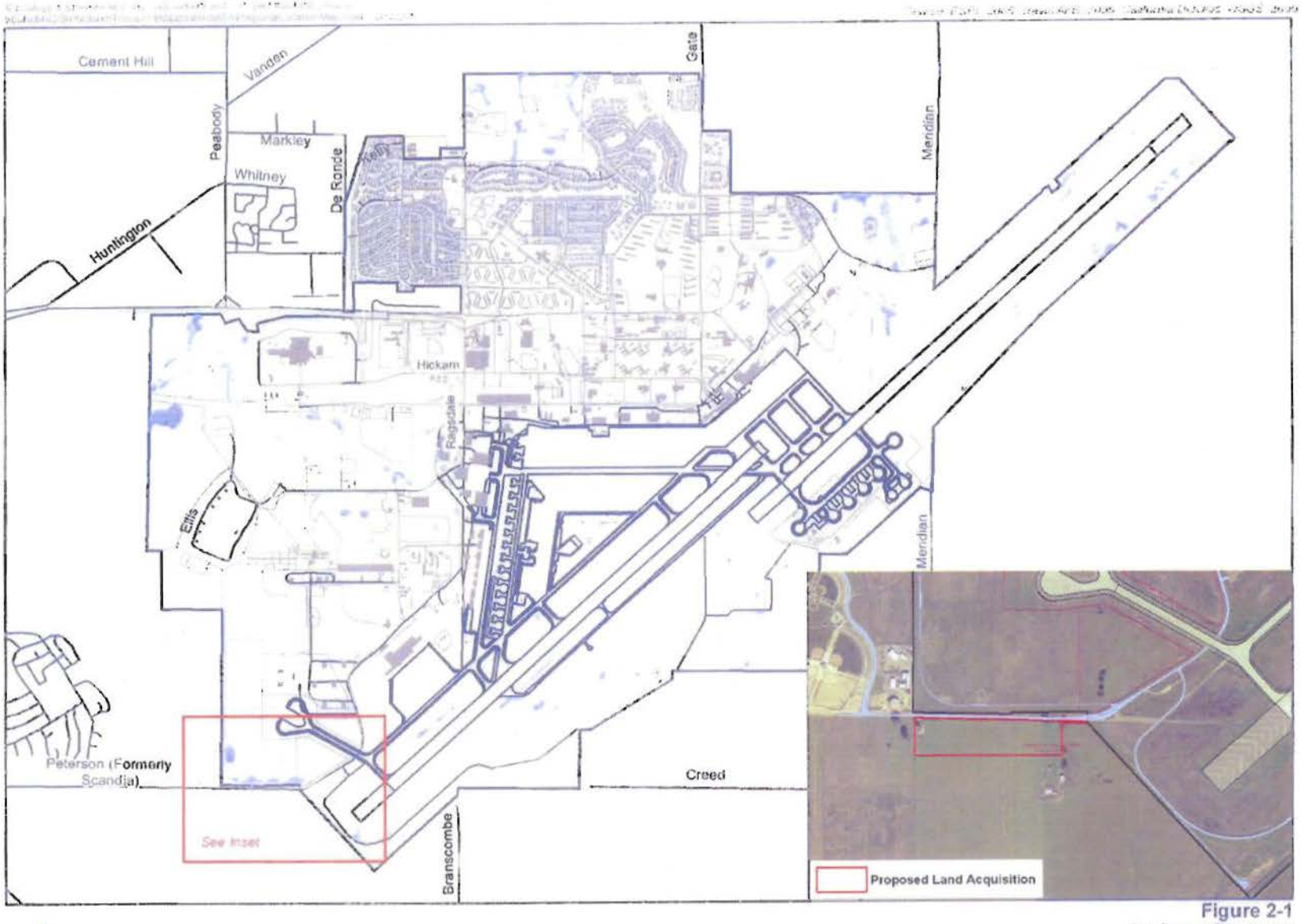

Figure 2-1
On-Base Features
South Gate Improvement Project
Travis Air Force Base
Solano County, California

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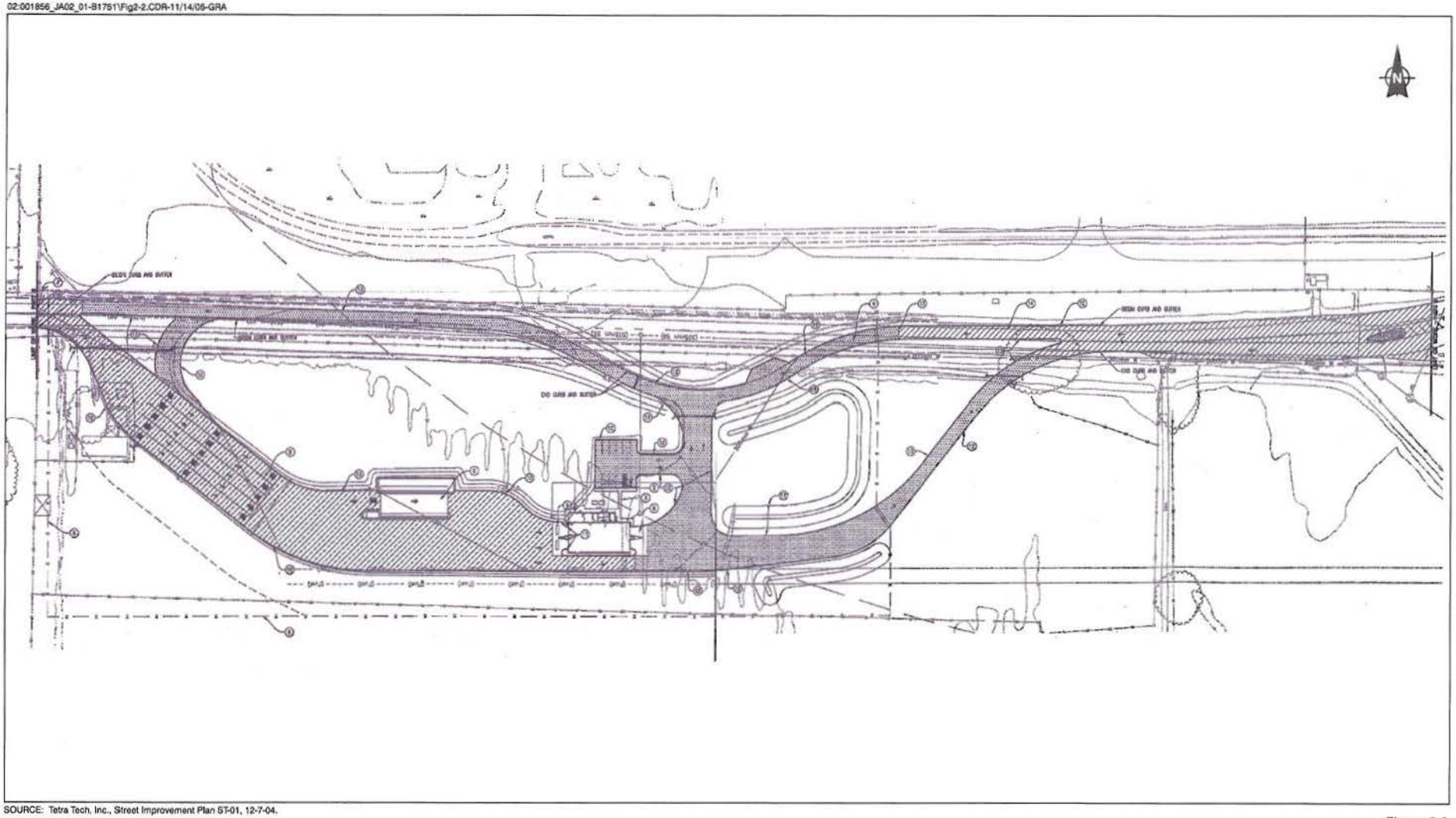

SOURCE: Tetra Tech, Inc., Street Improvement Plan ST-01, 12-7-04.

SCALE
0 25 50 M

Figure 2-2
South Gate Site Development Plan
South Gate Improvement Project
Travis Air Force Base
Solano County, California

However, Alternative 2 was not selected as the proposed action for several reasons. Alternative 2 would not allow phasing of overall improvements because gate and roadway improvements would be needed before usage could occur, it would impact traffic operations at Air Base Parkway and Peabody Road, and it would not improve regional access because all access points would still be located in the northwest corner of the base.

2.2.3 Alternative 3

Alternative 3 relocates commercial access to a new ECF and roadway that connects Walters Road (near the railroad crossing) to Hickam Avenue. This alternative would provide access to the Hickam Avenue corridor that is a destination for some commercial vehicles. Alternative 3 would require traffic signing for vehicles which could be accomplished from Interstate 80 and along Air Base Parkway. One new traffic sign would be required at the intersection of Air Base Parkway and Walters Road, directing commercial traffic south on Walters Road to a commercial gate. This alternative would comply with the Q-D Arc Air Force Manual 91-201 by removing all traffic from Q-D Arc and taxiway and flight line areas.

However, Alternative 3 was not selected as the proposed action for several reasons. Alternative 3 would not allow phasing of overall improvements because gate and roadway improvements would be needed before usage could occur. In addition, the alternative would impact traffic operations along Walters Road south of Air Base Parkway and would not provide regional access because all access points would still be located in the northwest corner of the base.

2.2.4 Alternative 4 - No-Action Alternative

Alternative 4, the no-action alternative, would include increased control and warning systems at the South Gate per ECF Guidelines, but would not relocate it out of the Q-D Arc. Features of this alternative include the installation of:

- A gate and/or barrier control with a signal system at the approaches to the taxiway crossing;
- Bollards on the taxiway outside the "roadway clear zone" and passive delineation;
- A system to warn of approaching aircraft, which would include two red lights on breakaway posts that would flash when aircraft approacheds and, potentially, a bell system to supplement the flashing lights; and
- A reactive detection system in addition to monitoring by security forces and/or South Gate personnel.

This alternative would offer ways to reduce manpower requirements from current levels while achieving the same or a greater level of security, and still maintain minimum mission requirements. However, many of the current concerns would

not be resolved including traffic delays, potential safety and liability issues, residual security issues, and maintaining mission flexibility with respect to tasks assigned to Travis AFB in the future by the Air Force AMC.

2.3 Comparison of Alternatives and Identification of the Preferred Alternative

Table 2-1 presents the evaluation criteria and whether or not each of the alternatives would meet the criteria.

Table 2-1 Comparison of Alternatives by Criteria

Evaluation Criteria	Alt. 1 (Proposed Action)	Alt. 2	Alt. 3	Alt. 4 (No Action)
Remove traffic inspection from Q-D arc	Yes	Yes	Yes	No
Provide inspection facility infrastructure meeting Air Force and DoD requirements	Yes	Yes	Yes	No
Allow phased approach	Yes	No	No	No
Relocate commercial traffic away from areas that experience regular traffic congestion	Yes	No	No	No
Meet ATFP funding requirements	Yes	No	No	No
Provide another access point for emergency vehicles	Yes	Yes	No	No
Provide regional access for POVs	Yes	No	No	No

As shown, Alternatives 2 and 3 do not meet the FPCON and other criteria. As a result, these alternatives have been eliminated from further consideration in this EA.

2.4 Identification of the Preferred Alternative

Alternative 1 was selected as the preferred alternative and is, therefore, the proposed action evaluated in this environmental assessment based on the ability to meet the purpose and need. Advantages of this alternative, in addition to complying with Air Force Manual 91-201 "Explosive Safety Standards" and AMC Entry ECF Guidelines include the following:

- The new facility could be developed independently of South Gate redesign plans;
- Regional access to the south could be provided by opening the gate to private vehicles;

- Commercial traffic would be routed away from areas that experience regular traffic congestion;
- Access for emergency services would be provided from the south;
- Installation security would be improved; and
- ATFP funding could be met due to the potential for project phasing.

The potential impacts associated with both the proposed action (Alternative 1) and the no-action alternatives are analyzed in Sections 3 and 4 of this report. Table 2-2 provides a comparison of the impacts associated with these two alternatives.

Table 2-2 Comparison of Proposed Action and No-Action Alternatives Resource Impacts

Resource Area/ Issue	Proposed Action (Alternative 1)	No-Action Alternative
Air Quality	Temporary, short-term increase in emissions related to construction activity. Emissions do not exceed the General Conformity Rule *de minimis levels*. Therefore, not considered a significant impact.	No significant impact.
Noise	Temporary, short-term related to noise associated with construction activities within existing background noise level. Therefore, not considered a significant impact.	No significant impact.
Hazardous Materials and Waste Management	Limited use of hazardous materials during construction and potential for release. Minor increase in use of such materials during O&M activity. Hazardous materials and waste generated would be minimal and handled in accordance with Travis AFB's established base plans and protocol. Therefore, not considered a significant impact.	No significant impact.
Water Resources	Temporary impacts to the agricultural drainage ditch, including disturbance to banks and potential for sedimentation due to storm water run-off. Temporary impacts will be minimized and avoided through implementation of Travis's Storm Water Prevention Pollution Plan. Permanent impacts to 0.178 acre where culverts and fill will be installed to allow for the re-alignment of Peterson Road. Culverts will be installed during dry season to prevent impacts to potential seasonal flow. Culverts will be designed to handle high flow and overall drainage patterns and hydrology would not be impacted. Therefore, these impacts are not considered significant.	No significant impact.

Table 2-2 Comparison of Proposed Action and No-Action Alternatives Resource Impacts

Resource Area/ Issue	Proposed Action (Alternative 1)	No-Action Alternative
Biological Resources	Potential indirect impacts to California tiger salamander (CTS) due to loss of potential habitat associated with the agricultural drainage ditch where culverts will be installed and 5.30 acres of upland area that will be paved. However, the site is not in an area designated by the USFWS as critical CTS habitat. Furthermore, limited habitat and presence of exotic species, such as bull-frog, decreases potential for CTS near Travis AFB. Travis AFB would implement design measures to reduce impacts to CTS and consult with the USFWS in accordance with Section 7 of the ESA to ensure impacts are not significant.	No significant impact.
Socioeconomics	No significant impact.	No significant impact.
Cultural Resources	No significant impact.	No significant impact.
Land Use	Re-designation of land use in the project area from Extensive Agriculture to Public Use would be required. This designation would be consistent with applicable land use plans and policies. Therefore, not considered a significant impact.	No significant impact.
Transportation Systems	Temporary, short-term related increase in traffic due to construction activity. Roadways in vicinity of project are capable of accommodating increased traffic. Long-term impact would be an overall improvement to traffic flow at Travis AFB and in the region. Therefore, the project would benefit transportation systems.	No significant impact.
Environmental Management (Pollution Prevention, Environmental Restoration Program, Geology, and Soils)	Temporary, short-term and limited potential for loss of soils due to erosion. Permanent impact to 5.30 acres of soil where paving will occur. Topsoil will be salvaged to facilitate restoration in temporarily disturbed areas. Increase in impervious surface would not result in flooding or additional run-off during storm events due to limited extent of paving and relatively flat topography of the project area (15 to 200 feet above mean sea level). Therefore, not considered a significant impact.	No significant impact.

3 Affected Environment

This section describes the existing environmental resources and conditions that could be affected by or could affect the implementation of the Proposed Action and No-Action Alternatives.

3.1 Land Use

Travis AFB

Land use at Travis AFB is guided by the *Base General Plan,* which complies with *Air Force Instruction 32-7062, Base Comprehensive Planning* and furthers the policies and goals of NEPA Public Law 91-190. Land use on the base is broken into 10 use categories, which are arranged in cohesive land use areas. The residential areas are located in the northern half of the base, commercial-administrative use occurs just south of the residential area and extends east and west across the base, and mission and airfield operations areas are located along the south side of the base (USAF 2003b).

Land use is also indirectly guided by requirements found in the various air force instruction manuals. Relevant to this project, in particular, are Air Force Manual 91-201 "Explosives Safety Standards" and AMC ECF Guidelines, which are discussed below. The South Gate entrance is located within the Q-D Arc zone.

Regional

Travis AFB is located in the City of Fairfield in Solano County and is adjacent to the City of Suisun (also Solano County). Solano County is an approximately 898-square mile area (823 square miles of land and 75 square miles of water), a majority of which is located in the Sacramento Valley Basin (Solano County Planning Department 2004a). Agricultural use accounts for approximately 62% of land use in Solano County, equating to approximately 326,566 acres (Solano County Agriculture Department 2005). Over half the agricultural lands are irrigated agriculture and the remainder is dry-land farming in Montezuma Hills and grazing/pasture. Travis AFB is one of several facilities in Solano County comprising public land use.

Land use in the immediate vicinity of the base is primarily unincorporated, agricultural land in county jurisdiction. Travis AFB abuts the City of Fairfield at the northwest corner and is immediately adjacent to low-residential, commercial, commercial service, mixed use, and Travis Reserve use areas. Operations at

Travis AFB influence regional land use planning and development in Solano County due to its economic role, sheer size (accounts for a little over 1% of the county), and potential noise and safety hazards (Solano County Planning Department 2004a). Figure 3-1 illustrates land use in the project vicinity.

Proposed Project Area

The proposed project area is contained within an overall 306.76-acre parcel. The remaining area of the parcel currently has restrictive safety easements totaling 205.55 acres. In addition, Travis AFB has two easements on the parcel to support a navigational aid site that total 1.78 acres (EE/EBS 2004).

The project area is located in an unincorporated area of Solano County, just south of Peterson Road and beyond the county's current urban growth line, in an area designated as Extensive Agricultural land use. Extensive Agricultural areas generally consist of the county's non-irrigated lands and include both essential and non-essential agricultural land (Solano County Planning Department 2004b). Extensive agricultural land are significant for their contribution to the local agricultural economy and/or because it preserves land that, if developed for urban use, would pose potential health and safety hazards. The area is zoned Exclusive Agriculture with a minimum parcel size requirement of 160 acres. The parcel is subject to a Williamson Act contract, as discussed in more detail below. This parcel is classified as grazing land by the California Department of Conservation.

In addition, the project area is within Suisun's sphere of influence as established by the Local Agency Formation Commission (LAFCO) (Skinner 2004). This sphere represents the "probable ultimate physical boundaries and service area" of the city. As a result, future development in this area must be compatible with both Solano County's and Suisun City's general plan policies and land use designations or as otherwise jointly agreed. The parcel is located in what would be zoned Agricultural Open Space Reserve by Suisun City.

Land Use Plans and Policies

Development at and around Travis AFB is controlled, guided, or influenced by numerous land use plans and policies. Plans and policies applicable to this project are discussed below.

Air Force Manual 91-201 "Explosives Safety Standards." This manual implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*, and DoD 6055.9-Std, DoD *Ammunition and Explosives Safety Standards*. It establishes a central source for explosives safety criteria. It identifies hazards and states safety precautions and rules when working with explosives. This manual indirectly influences development and land use on Travis AFB as it precludes certain activities and facilities in the vicinity of potential explosive sites.

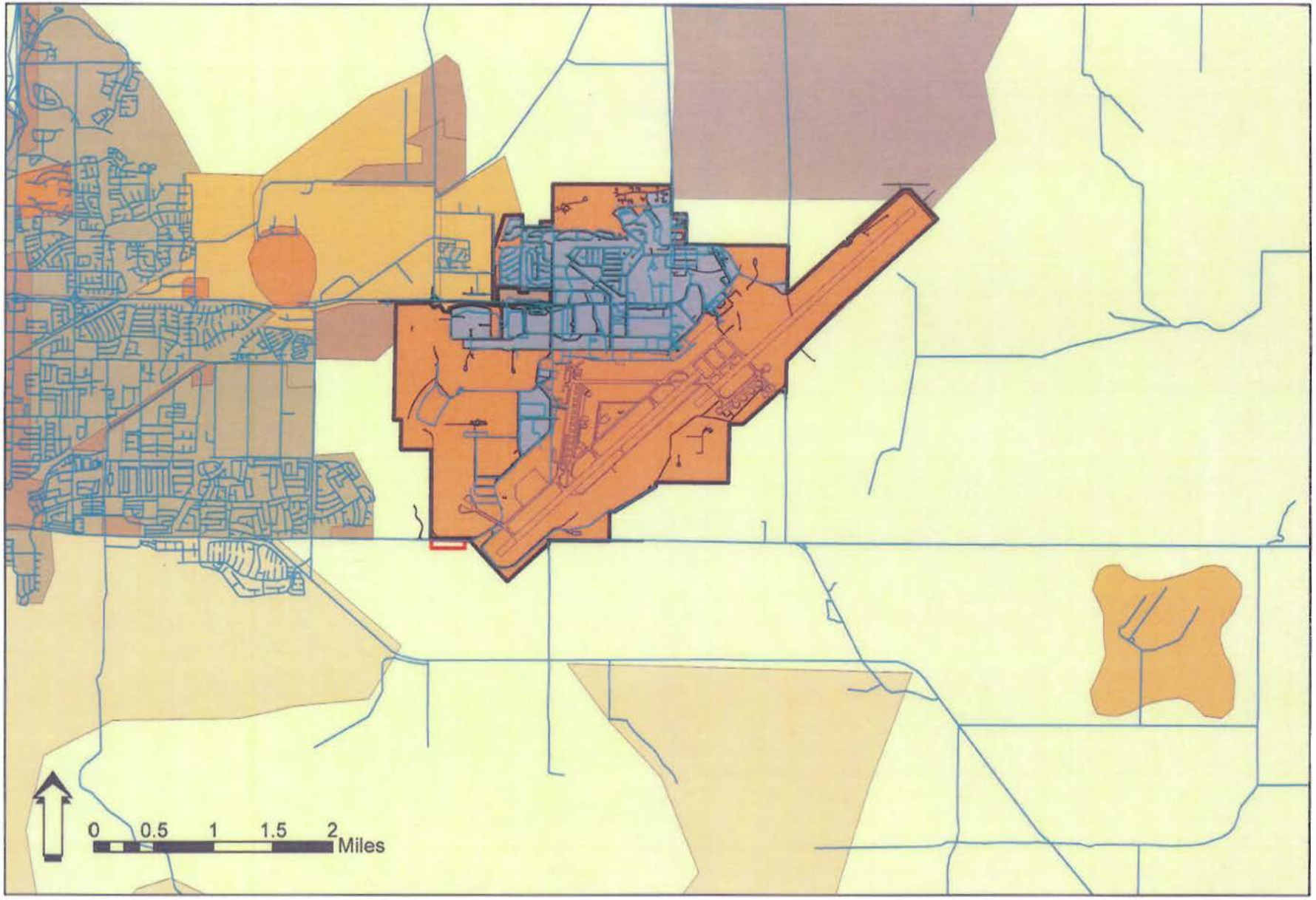

Figure 3-1
Land Use in Vicinity of Proposed Project
South Gate Improvement Project
Travis Air Force Base
Solano County, California

Travis Air Installation Compatibility Use Zone. The DoD promotes compatible land use in areas surrounding airfields through the Air Installation Compatible Use Zone (AICUZ) program. The program provides guidelines for types of land use permitted in proximity of airfields through the establishment of a clear zone (CZ), accident potential zones (APZ) I and II, and four noise zones (65-69 dBA [decibels (A-weighted)], 70-74 dBA, 75-79 dBA, and 80+ dBA). The greatest potential for an accident affecting off-base activities is in the CZ, followed by APZ I and APZ II. Residential use is not recommended to occur in areas within any of the above noise ranges. On the contrary, agricultural and open-space uses (the current use of the project area) are the least restrictive and are generally recommended within APZ I, II, and all four noise zones. Some obstructions and uses, such as agriculture, may be recommended within the CZ. The proposed project is not located in the CZ and APZ zones, although the eastern area of the parcel is in the Clear Zone.

Solano County General Plan Land Use and Circulation Element. The Solano County General Plan consists of the nine general plan elements required under state law. This combined element is intended to guide long-range growth and development in an orderly manner that protects the county's agriculture and natural resources. In general, the county maintains that land beyond the urban growth line shall remain agricultural and open space uses or developed for rural uses. Should an area outside the line be proposed for development, it is likely that the area would need to be annexed by the appropriate city into their urban limit. Current county policy states, "what is urban should be municipal," meaning development requiring urban services should be located in incorporated cities. This is largely due to the county's inability to provide necessary services to developed areas (i.e., utilities) due to its current government structure. There are several policies and guidelines in the Land Use and Circulation Element applicable to the proposed project. These include:

- Urban development shall be confined to land use patterns, which retain essential agricultural land of the county and minimize energy consumption;
- The unincorporated area shall not be developed with urban uses and urban services shall not be provided, except minimal public facilities services essential for health, safety, and welfare;
- Lands within aviation easements and flight approach areas around Travis AFB and rural airport facilities present potential safety hazards. Development in these areas should, therefore, be discouraged and the extensive agricultural uses retained;
- The county shall protect, in appropriate open space uses, lands within approached patterns of airport facilities; and

- The county shall ensure that land uses within aviation easements and runway approach and take off areas would not conflict with the current and possible future use and expansion of airport facilities.

Travis AFB Land Use Compatibility Plan. The Travis AFB Land Use Compatibility Plan was adopted by the Solano County Airport Land Use Commission (ALUC) in 2002 to facilitate land use planning in the vicinity of the base (Shutt Moen 2002). The ALUC is responsible for reviewing proposed projects in the vicinity of the base to determine if they are compatible with Travis AFB operations or would be negatively affected. The provisions and requirements in this plan are also to be implemented by Solano County and the cities surrounding the base in addition to their own general plans. The criteria and standards for safety and noise hazards in the plan are similar to those described in the AICUZ. The proposed project is located in Compatibility Zone C, with noise potential between 75 and 80 decibels (dB) Community Noise Equivalent Level (CNEL).

City of Suisun Land Use Element. The Suisun City Land Use Element identifies the area south of Peterson Road to Highway 12 where the proposed project is located as Agriculture Open Space Reserve. The area south of Highway 12 is within the Suisun Marsh Protection District and urban development is strictly prohibited. The area southwest of the project is primarily zoned residential.

California Land Conservation (Williamson) Act. The Williamson Act was passed by the California Legislature in 1965. It allows local governments to enter into contracts with private landowners whose land is located in an agricultural preserve. The contract restricts the parcel to agricultural or related open-space land uses. In return, landowners receive property tax assessments that are much lower than actual value because they are based upon farming and open space uses as opposed to full market value. Contracts are established for a 10-year period and failure to comply with the contract can result in a court injunction by the local government and monetary fines.

3.2 Socioeconomics

3.2.1 Population

Solano County includes 823 square miles of land in northern California (Solano County 2005). According to the 2000 census, the total population of Solano County was 394,542 persons. The population of the county increased by 15.9% between 1990 and 2000, and growth is projected to continue. Approximately 9,966 military personnel and their dependents reside in the census tract designated as Travis AFB (United States Department of Commerce - Bureau of the Census 2005).

The City of Fairfield to the northwest is the closest population center to Travis AFB and is home to approximately 77,211 persons, according to the 2000 census. Fairfield experienced a 24.5% increase in population from 1990 to 2000 (United States Department of Commerce - Bureau of the Census 2005).

3.2.2 Employment

Within Solano County, the major industries for employment include retail trade, health care and social assistance, and government work, as shown in Table 3-1. Travis AFB is one of the major employers in the county, and as shown, the military accounts for approximately 5% of the total county employment.

Table 3-1 Employment by Industry in Solano County, California (2003)

Employment Category	2003	% Total
Total employment	172,213	100%
Farm employment	2,210	1%
Non-farm employment	170,003	99%
Private employment	134,966	78%
Retail trade	22,602	13%
Health care and social assistance	18,279	11%
Construction	13,824	8%
Accommodation and food services	11,796	7%
Other services, except public administration	9,599	6%
Manufacturing	9,235	5%
Administrative and waste services	9,275	5%
Other private industry (each representing <5% of total)	39,198	23%
Government and government enterprises	35,037	20%
Federal, civilian	4,129	2%
Military	8,514	5%
State and local	22,394	13%
State government	4,377	3%
Local government	18,017	10%

Source: United States Department of Commerce - Bureau of Economic Analysis 2005.

Some examples of other major employers in Solano County include Anheuser-Busch, Inc., Campbell's, Hines Wholesale Nurseries, Northbay Medical Center, and Solano Community College, among others (California Employment Development Department 2005b).

Unemployment in Solano County has historically been below the average for the state of California as shown in Table 3-2. Within the county, unemployment has been slightly on the rise since 2000, which the entire nation has experienced. From 2003 to 2004 the rate has declined slightly, which is also following the trend of the state and nation.

Table 3-2 Unemployment Statistics for Solano County and California (2000-2004)

Year	Solano County	California
2004	5.9	6.2
2003	6.4	6.8

Table 3-2 Unemployment Statistics for Solano County and California (2000-2004)

Year	Solano County	California
2002	5.7	6.7
2001	4.5	5.4
2000	4.5	5.0

Source: California Employment Development Department 2005a.

3.2.3 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of the programs on minority and low-income populations. Disproportionate environmental impact occurs when the risk for a minority population or low-income population from exposure to an environmental hazard exceeds the risk or rate of the general population and, where available, to another appropriate comparison group (DOD 1995; USEPA 1998).

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates that federal agencies identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of federal policies, programs, activities, and standards (62 *Federal Register* 19883-19888).

In order to comply with Executive Orders 12989 and 13045, ethnicity, poverty status, and age of the populations in the census tracts bordering Travis AFB were examined and compared to regional, state, and national data (see Table 3-3).

Table 3-3 Environmental Justice Data

Location	Percent Minority	Percent Hispanic	Poverty Rate	Percent Aged 17 Years or Younger
United States	**25%**	**13%**	**12%**	**26%**
California	**41%**	**32%**	**14%**	**27%**
Solano County	**44%**	**18%**	**8%**	**28%**
Census Tract 2528 (Travis AFB)	34%	11%	6%	32%
Census Tract 2523.09	50%	14%	5%	29%
Census Tract 2527.02	57%	16%	9%	29%
Census Tract 2535	47%	17%	6%	37%
Census Tract 2527.06	17%	17%	10%	25%

Source : United States Department of Commerce - Bureau of the Census 2005.
Shaded cells indicate exhibit a higher concentration of minority populations, persons below the poverty level and children younger.

As shown in Table 3-3, there are instances where local census tracts exhibit a higher concentration of minority populations, persons below the poverty level and children aged 17 or younger in Solano County (refer to the shaded cells in Table 3-3).

3.3 Traffic and Transportation

Regional Transportation System

Regional access to Travis AFB is provided by several major highways, including Interstates 80, 680, and 505, and state routes, including State Routes 12, 113, and 160. This regional circulation system connects Solano County to the surrounding counties of San Francisco, Sacramento, Napa, Contra Costa, and Alameda.

A system of local roadways provides access from the highways to Travis AFB. Roadways west of the base that branch off of the Interstate 80 corridor and service traffic from communities west and southwest of the base (e.g., Fairfield, Suisun, Benicia, Martinez, and Napa) include, Cordelia Road, Air Base Parkway, Travis Boulevard, E. Tabor Avenue, Peterson Road, Pennsylvania Avenue, Walters Road, Sunset, and N. Texas. Roadways from north and northeast of Travis AFB that intersect Interstate 80 and service traffic from communities north and northeast of the base (e.g., Vacaville, Dixon, and Davis) include Peabody Road, Leisure Town Road, and Nut Tree Road. Access from the northeast is also provided from State Route 113 and roads including Fry Road and Midway Road. Access from the southeast is primarily via State Route 12.

Existing traffic volumes and Level of Service (LOS)[2] for roadway segments in the project vicinity (west and southwest of the base) that could be affected by the proposed project (as discussed in Section 4.3) are provided in the Table 3-4.

Table 3-4 Roadways in the Project Vicinity

Roadway	Segment	Approximate Average Daily Traffic Volume	Approximate Level of Service (LOS)
Pennsylvania Avenue	I-80 to Kentucky Street	17,105	C
	Kentucky Street to W. Texas	18,327	
	W. Texas to Woolner Avenue	20,283	
	Woolner Avenue to State Route 12	15,737	
N. Texas Street	I-80 to Air Base Parkway	15,239	C
	Air Base Parkway to E. Tabor Avenue	26,846	
Dover Avenue	Air Base Parkway to E. Travis Boulevard	15,898	C

[2] LOS is based on traffic congestion, which is measured by dividing traffic volume by roadway capacity, resulting in a volume-to-capacity (V/C) ratio. The V/C ratings are divided into six LOS categories, A through F, that represent conditions ranging from unrestricted traffic flow (A) to significant traffic congestion (F).

Table 3-4 Roadways in the Project Vicinity

Roadway	Segment	Approximate Average Daily Traffic Volume	Approximate Level of Service (LOS)
Sunset	E. Tabor Avenue to E. Travis Boulevard	16,802	B
	E. Travis Boulevard to State Route 12	20,000	C/D
Walters Road	Airbase Parkway to Peterson Road	16,000	B
Air Base Parkway	I-80 to Dover Avenue	48,933	C/D
	Dover Avenue to Clay Bank Road	34,616	
	Clay Bank Road to Walters	29, 118	
	Walters Road to Peabody Road	24,794	
E. Tabor Avenue	N. Texas Street to Dover Avenue	14,614	C
	Dover Avenue to Walters	14,054	
Travis Blvd	I-80 to Second Street	53,611	C/D
	Second Street to N. Texas	37,763	
	N. Texas to Dover (E. Travis)	17,647	
	Dover to Sunset Ave	16,682	
Peterson Road	Waltersto Ragsdale Street (Travis AFB)	5,000	A
State Route 12	I-80 to Pennsylvania	35,000	C/D
	Pennsylvania to Walters	45,000	

Source: Solano County 2004, City of Fairfield, 2003, Harms 2005.

Travis AFB Transportation System

Access to Travis AFB is provided at the following four gates:

- Main Gate: Located at the west side of the base on Travis Avenue
- Hospital Gate: Located at the northwest side of the base on Air Base Parkway and Parker Road
- North Gate: Located at the north side of the base on Burgan Boulevard
- South Gate: Located at the southwest side of the base on Ragsdale Street

Traffic studies were conducted for Travis Air Force Base in 2002 and 2004. Results indicated that the majority of traffic is generated by activities on the north side of the base, north of Hangar Avenue, where the residential and commercial areas of the base primarily occur. The highest traffic volumes occur at Main Gate and Hospital Gate. The average daily traffic volume at each gate is provided in Table 3-5.

Table 3-5 Average Daily Traffic Volume at Travis Air Force Base Entrance Gates as of May 2004

Gate	Average Daily Traffic Volume	Percent Total Traffic Entering Base	Allowable Use
Main Gate	20,134	62	Commercial and Private Vehicles, Inbound and Outbound
Hospital Gate	7,392	23	Commercial and Private Vehicles, Inbound and Outbound
North Gate	4,489	14	Commercial and Private Vehicles, Inbound and Outbound
South Gate	326	1	Commercial Vehicles Only, Inbound Only
Total	32,341		

Source: Gannett Fleming 2004.

As illustrated in Table 3-5, average daily traffic volume at the South Gate entrance only accounts for approximately one percent of overall average daily traffic entering Travis AFB. This is largely the result of access to the South Gate being limited to inbound, commercial vehicle traffic. The traffic volume at the other three gates results in congestion and delays during peak hours (Gannett Fleming 2002). Based on a traffic study prepared by the Military Traffic Management Command Transportation Engineering Agency and its consultant in 2002, traffic delays and back-up of vehicles at the gates are substantial enough to warrant gate design modifications at all of the gates, including additional lanes, expanded facilities, etc. The study recommend, as a priority, expanding capabilities at the South Gate to accommodate a higher volume of commercial traffic, opening the entrance to POVs to provide regional access to the south, and opening the outbound lane.

The South Gate entrance currently accommodates the majority of commercial traffic at the base; however, commercial traffic continues to utilize the Main Gate and North Gate. The South Gate entrance is located at the south end of Ragsdale Street, which is the principal, north-south arterial across the base. Current facilities at South Gate entrance are minimal and include an inbound and outbound (closed) lane and a gatehouse. The South Gate entrance facilities are currently located within the Q-D Arc, which is not compatible with Q-D Air Force Manual 91-201. Ragsdale Street crosses Taxiway M and traffic using the South Gate entrance can be held at the gate for up to one hour when the taxiway is in use (Holmes 2005a).

3.4 Air Quality

As required by the Clean Air Act (CAA), as amended in 1977 and 1990, the United State Environmental Protection Agency (EPA) has designated six pollutants as "criteria pollutants" for which it has established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. The California State Implementation Plan (SIP) prescribes measures to achieve and maintain NAAQS. Additionally, California adopted a state CAA in 1998 that requires regions to develop and implement strategies to attain California's Ambient Air

Quality Standards (AAQS). For some pollutants, the California standards are more stringent than the national standards (California Air Resources Board 2005; Bay Area Quality Management District 2005).

In 1990, the CAA was amended to prohibit a federal agency from undertaking an action in a non-attainment area unless the agency determined that the activity confirms with regional SIPs. The General Conformity Rule (40 CFR Parts 51 and 93) implements these requirements for federal actions occurring in air quality non-attainment areas. A federal action is exempt from applicability of the General Conformity Rule requirements if the action's total net emissions are below the *de minimis* levels specified in the rule (see Table 3-7) and are not regionally significant (i.e., the emissions represent 10% or less of a non-attainment or maintenance area's total emission inventory of that pollutant), or are otherwise exempt per 40 CFR 51.153. Total net emissions include direct and indirect emissions from all stationary point and area sources, install sources, and/or mobile sources caused by the federal action that are not covered by another permitting program.

Table 3-7 De Minimis Levels for Exemption from General Conformity Rule Requirements for Ozone and Particulate Matter (Tons/Year)

Pollutant	Tons/Year
Ozone (VOCs or NO_x)[1]	
Serious non-attainment areas	50
Severe non-attainment areas	25
Extreme non-attainment areas	10
Marginal and moderate ozone non-attainment and ozone maintenance areas outside an ozone transport region	100
Particulate Matter	
Moderate non-attainment and maintenance areas	100
Serious non-attainment areas	70

Source: 40 CFR 51.

[1] Ozone does not occur directly from any source, but results from a series of reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in sunlight. Therefore, *de minimis* levels of NO_x and VOCs are used to determine exemption from the General Conformity Rule for emissions that would affect ozone levels in an area of nonattainment for ozone.

Travis AFB and Proposed Project Area

Travis AFB is located in the San Francisco Bay Area Air Basin (SFBAAB) Air Quality Control Region (AQCR). Air quality in this region is regulated by the Bay Area Quality Management District (BAAQMD). By state standards, the project is located in an area that is attainment for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) and marginally nonattainment for ozone (O_3) (1-hour standard), particulate matter of 10 microns of less (PM_{10}), and particulate matter of 2.5 microns of less ($PM_{2.5}$). By federal standards, the project area is in attainment for all pollutants, except for O_3, for which it is determined to be in marginal nonattainment (California Air Resources Board 2005; Bay Area Quality Management District 2005).

Travis AFB Existing Emissions Sources

There are two types of existing emissions at Travis AFB, stationary and mobile emissions. Stationary source emissions are regulated under a Title V synthetic minor Operating Permit approved by the BAAQMD and include aviation gasoline storage tanks; jet engine test cells; painting, cleaning, and repair operations; and boilers, furnaces, and generators. The Title V Operating Permit provides for emissions at levels that will maintain attainment with the SIP. Mobile source emissions include emissions from aircraft engines, privately owned vehicles, and other aircraft ground support equipment. Emissions from such mobile sources may include the criteria pollutants PM_{10}, $PM_{2.5}$, CO, sulfur dioxide (SO_2), and NO_2, as well as VOCs, which contribute to the formation of ozone.

3.5 Noise

The primary source of noise at Travis AFB is associated with aircraft operations and maintenance. These noise sources impact land uses on the station as well as in the surrounding developed areas. The noise environment around an air station is typically described using a measure of the cumulative noise exposure (i.e., day-night average sound level [DNL]) that results from aircraft operations. DNL takes into consideration the time of day that aircraft events occur. Noise that occurs between 10:00 p.m. and 7:00 a.m. is weighed more heavily than noise during the day to account for the difference in human noise perception during the nighttime hours (see the Travis AFB Land Use Compatibility Plan as described in Section 3.1 for additional noise information).

The noise zones associated with Travis AFB are typically patterned after the airfield and associated flight paths for aircraft operations. Noise dissipates in a ring-like fashion outwards from the airfield. The highest levels of noise are closest to the flight line with lower levels extending outwards into surrounding land uses off base.

3.6 Hazardous Materials and Waste Management

Travis AFB

A variety of hazardous materials are used to facilitate operations at Travis AFB, including flammable solvents, contaminated fuels and lubricants, oils, paints, and other miscellaneous chemicals. Hazardous materials management at Air Force installations is primarily guided by AFI 32-7080 Hazardous Materials Management. In addition, Travis AFB also has an *Integrated Contingency Plan* (2005) that identifies measures for analyzing and handling hazardous materials, as well as cover emergency planning, response, and reporting in response to spills. Hazard material purchase on Travis AFB must be processed through the HAZMAT system. Hazardous materials used on the base are entered into the Environmental Management Information System, approved for use, and tracked from receipt through disposal.

Hazardous waste at Travis AFB is handled, stored, transported, and disposed of or recycled in accordance with 22 CCR; Resource Conservation and Recovery Act (RCRA), and Title 40 CFR parts 260-270, Hazardous Waste Management System. The Travis AFB *Hazardous Waste Management Plan* (2005) establishes procedures to manage hazardous waste in compliance with these regulations. Travis AFB is a RCRA large quantity generator. Hazardous waste around the base is generally collected and stored in 55-gallon drums until it is transported to the base's Hazardous Waste Storage Facility (HWSF), which is permitted for long-term storage of hazardous wastes (Travis AFB 2005). Hazardous wastes are ultimately transported from the HWSF to an approved disposal site.

Proposed Project Area

The proposed parcel for acquisition, including the project area, was reviewed for existing hazardous substances in compliance with Air Force Instruction 32-7066, *Environmental Baseline Surveys in Real Estate Transactions* and the American Society for Testing and Materials (ASTM) E1527-00, and *Standard Practice for Environmental Site Assessments.* An on-site survey was conducted on 19 September 2005 to determine the existence or absence of environmental contamination. This assessment included a review of:

- Available historic files, maps, documents, and aerial photographs of the area;
- Solano County's Assessor's parcel maps;
- Existing easement records; and
- Federal, state, and local government records.

Environmental Data Resources, Inc. (EDR) conducted the database search of available state and federal regulatory listings to identify sites associated with potential environmental concerns within a radius of up to 1 mile from the proposed project area that meet or exceed the ASTM standards. Nine sites were located within a 1-mile search radius, all of which are located on Travis AFB. None of the sites are located in the project area. More specifically, the EDR and/or fence line survey did not reveal any aboveground or underground storage tanks (USTs); evidence of pipeline rights-of-way, hydrant fueling, or transfer systems; oil/water separators; pesticide storage; or medical or biohazards, radioactive, or solid waste in the project area. There are several utility corridors located on the north shoulder of Peterson Road. These facilities would not be affected by the proposed project.

The Solano County Department of Resource Management was contacted to determine if the real property or adjacent properties are under the Local Oversight Program (LOP) for the investigation and corrective action regarding the release of fuels from USTs. The proposed project area was not identified on the current LOP site list. According to interviews with Travis AFB personnel and aerial pho-

tographs from 1937 to the present, the proposed project area has not been previously used for military activities and there is no evidence of ordnance.

Therefore, based on the database search and interviews described above, there are no known hazardous materials or petroleum products associated with the proposed project area. Therefore, according to AFI 32-7066, the property would be classified as a Category 1.[3]

3.7 Water Resources

The Clean Water Act (CWA), enacted in 1972, established the regulatory framework for the preservation of water quality through protection of and regulation of discharges into "Waters of the United States," which includes streams and wetlands. Section 404 of the CWA requires United States Army Corps of Engineers (USACE) approval for projects that involve dredge or fill activities across and in wetlands and streams. Section 401 of the CWA, requires the State Water Resources ~~Quality~~ Control Board (SWR~~Q~~CB) to review projects and federal permits to ensure that projects do not violate state water quality standards. This task is delegated by the SWRCB to the local Regional Water ~~Resources~~ Quality Control Board (RWQCB), except for projects that occur in areas regulated by more than one RWQCB. The RWQCB will issue a Section 401 certification for projects found to comply with state standards. Conditions placed on the issuance of a Section 401 certification become part of the Section 404 permit issued by the USACE.

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate storm water and point source discharges. The Environmental Protection Agency (EPA) delegates regulatory authority for the NPDES program to the RWQCB. An NPDES General Permit is required for projects that will disturb one or more acres of land and could result in storm water discharge to waters of the United States. An NPDES permit requires development and implementation of a Storm Water Prevention Pollution Plan (SWPPP) during construction.[4]

The California Department of Fish and Game (CDFG) regulates activities that could impact perennial, intermittent, and ephemeral rivers, streams, and lakes, including those that obstruct or divert the natural flow of a water body; change or use any material from the bed, channel, or bank of a river, stream, or lake; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or

[3] Based on AFI 32-7066, Category 1 is an area where no storage, release, or disposal has occurred. It is a property where no hazardous substances or petroleum products or their derivatives were stored, released into the environment or structures, or disposed of on the subject property and where no migration from adjacent areas has occurred.

[4] The project SWPPP does not have to be submitted to the RWQCB with the NPDES permit application and does not require formal approval by the agency. However, a SWPPP must be prepared and implemented to comply with a NPDES permit and failure to comply could result in project suspension and/or a fine.

ground pavement where it can pass into a river, stream, or lake. Projects that could affect waters of the state and that could adversely affect any existing fish and wildlife resources would require acquisition of a Streambed Alteration Agreement.

Travis AFB

Surface Waters

Union Creek and McCoy Creek occur on Travis AFB. Union Creek originates approximately 3 miles north of the base and splits into two branches just north of the base (Department of the Air Force 2003). The branches converge and flow out of the base at the southwestern corner. The west branch is channelized (concrete-lined or contained within culverts), runs under the runway and taxiways for 0.5 mile, and has sluggish flows except during storm events. The east branch flows into the North Gate Park Pond, travels underground, and emerges on the east and south side of the runway where it converges with the west branch at the southwest corner. Union Creek ultimately drains into Hill Slough (approximately 1.6 miles south of the base). Hill Slough continues to flow southwest and eventually joins Suisun Slough, which continues southwest and either flows into Montezuma Slough via Hunter Cut or continues to flow along the west side of Joice Island into Grizzly Bay. McCoy Creek is a smaller drainage that carries storm drain water. McCoy Creek flows under the runway and discharges into Union Creek. There are several wetlands, including vernal pools, scattered throughout the base.

Groundwater

Groundwater at the base, though limited and shallow, flows south to the Suisun Marsh, on to the Suisun Bay, and eventually to the San Francisco Bay. Recharge to the shallow groundwater table is from the foothills of Cement Hill to the north, in-channel infiltration from various creek draining areas (i.e., Union Creek, Denverton Creek, smaller unnamed creeks northwest of the base), and through direct precipitation (Travis Air Force Base 2003b)

Floodplains

EO 11988, "Floodplain Management" (signed May 24, 1977) directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. Two areas on Travis AFB are located within the 100-year flood zone (Travis Air Force 2003b). The first area is the western branch channel of Union Creek. The channel fills with water during heavy rains and is the main drainage for a large area of the west side of the base. The second floodplain area is the riparian zone along the eastern branch of Union Creek (approximately 25 acres) that flows into the pond in North Gate Park..

Proposed Project Area

A delineation of waters and wetlands of the United States of the 18.6-acre parcel proposed for acquisition was conducted in September 2005 to identify jurisdic-

tional features that could be impacted by project activities. The delineation was preformed using the routine on-site determination method outlined in the USACE *Wetland Delineation Manual* (Environmental Laboratory 1987). The Delineation of Waters of the United States report is provided in Appendix B.

Table 3-8 provides the total acreage for features identified in the overall surveyed parcel and within the 12.4-acre proposed project area. Figure 3-2 depicts the delineated features on an aerial photograph.

Table 3-8 Acreage of Waters of the United States in the Overall 18.6-acre Parcel Proposed for Acquisition by Travis Air Force Base and 13.63-acres South Gate Improvement Project area

Feature	Acres in Surveyed Parcel	Acres in 12.4-acres Project Area
Wetland WW01-001	0.010	0; east of project area
Wetland WW01-002	0.007	0; southeast of project area
Wetland WW01-003	0.014	0.014
Agricultural drainage ditch SS01-001	1.687	1.115
Total	**1.718**	**1.128**

Source: EE 2005.

Surface Waters

In general, drainages characterized by a defined bed and bank and that were either vegetated or unvegetated along their banks were identified as jurisdictional waters of the United States. Wetlands were identified by reviewing United States Geological Survey 7.5-minute topographic maps, National Wetland Inventory maps, and field surveys and sampling for the three characteristic wetland parameters; hydrology, vegetation, and soils.

Agricultural Drainage Ditches. One agricultural drainage ditch (SS01-001) was identified in the 18.6-acre parcel. SS01-001 runs 2,940 feet along the western, northern (just south of Peterson Road), and eastern (adjacent to Travis AFB) boundaries of the parcel, forming a squared, upside down U-shape around the area (refer to Figure 3-2). SS01-001 was dry at the time of the survey; however, in the event of flow, it would eventually drain into Union Creek near State Route 12. SS01-001 has a defined bed and bank with unconsolidated beds of silt and sand. The average bank to bank width of the feature is approximately 25 feet at the top of the drainage ditch and it has a bank height of approximately 4 feet. There was no defined high water line.

There was no riparian vegetation associated with the feature; however, there is vegetation such as *Hordeum marinum ssp. gussoneanum* and *Polypogon maritimus* within the beds, indicating that water is present during a portion of the

tional features that could be impacted by project activities. The delineation was preformed using the routine on-site determination method outlined in the USACE *Wetland Delineation Manual* (Environmental Laboratory 1987). The Delineation of Waters of the United States report is provided in Appendix B.

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There was no riparian vegetation associated with the feature; however, there is vegetation such as *Hordeum marinum ssp. gussoneanum* and *Polypogon maritimus* within the beds, indicating that water is present during a portion of the

growing season. However, the last time the agricultural drainage ditch is believed to have been used for irrigation was in the 1980s (Bob Holmes 2005). Photographs of the agricultural drainage ditch SS01-001 are provided in Appendix B.

Wetlands. Three wetlands were delineated in the surveyed parcel; WW01-001, WW01-002, and WW01-003. WW01-001 and WW01-002 can both be characterized as vernal pools. WW01-001 is 0.010 acre and occurs in the northeastern corner of the parcel, adjacent to agricultural drainage ditch SS01-001. WW01-002 occurs along the southern boundary of the parcel, near the eastern boundary. In total, wetland/vernal pool WW01-002 is 0.061 acre, but only 0.007 acre of the feature is within the parcel as depicted in Figure 3-2. At the time of the delineation, the soils were not saturated. Since the vernal pools are formed in a slight depression in the landscape, wetland hydrology is largely driven by runoff from the surrounding area. The dominant vegetation present at both wetlands/vernal pools was *Polypogon maritimus* (OBL) and *Veronica anagallis-aquatica* (OBL). Soils had a chroma of 2 with mottles (10 YR 5/6). Photographs of the wetlands are provided in Appendix B.

Wetland WW01-003 is 0.014 acre and is located approximately 100 feet south of the existing house, near the western boundary of the parcel in the project area (EE 2005). As depicted in Figure 3-2, WW01-003 is comprised of two small wetland features located adjacent to each other. However, during data collection the wetlands were delineated as a single feature that is a combined 0.014 acre. The dominate vegetation consisted of *Lepidium latifolium* (FACW) and *Cynodon dactylon* (FAC). Soils had a chroma of 2 with mottles (10 YR 5/6), and was moist beginning at 3 inches below ground surface to the bottom of the soil test pit of 12 inches. Based on the location of wetland WW01-003 in relation to the existing house, it is possible that the moisture and associated wetland conditions are a result of discharge from the homes leach field or water pipe (see photo in Appendix B). Unlike other wetlands in the area, this wetland does not have typical vernal pool characteristics. At this time, Travis AFB can not confirm whether this wetland is the result of a leach field or water pipe. As a result, WW01-003 has been delineated as a wetland.

Groundwater

Groundwater characteristics in the proposed project area would be the same as in the Travis AFB area, namely, limited and shallow.

Floodplains

The Federal Emergency Management Agency (FEMA) has delineated floodplain areas on flood insurance rate maps (FIRM). The FIRM for Solano County identifies the proposed project area as occurring in floodplain Zone C, which is a flood

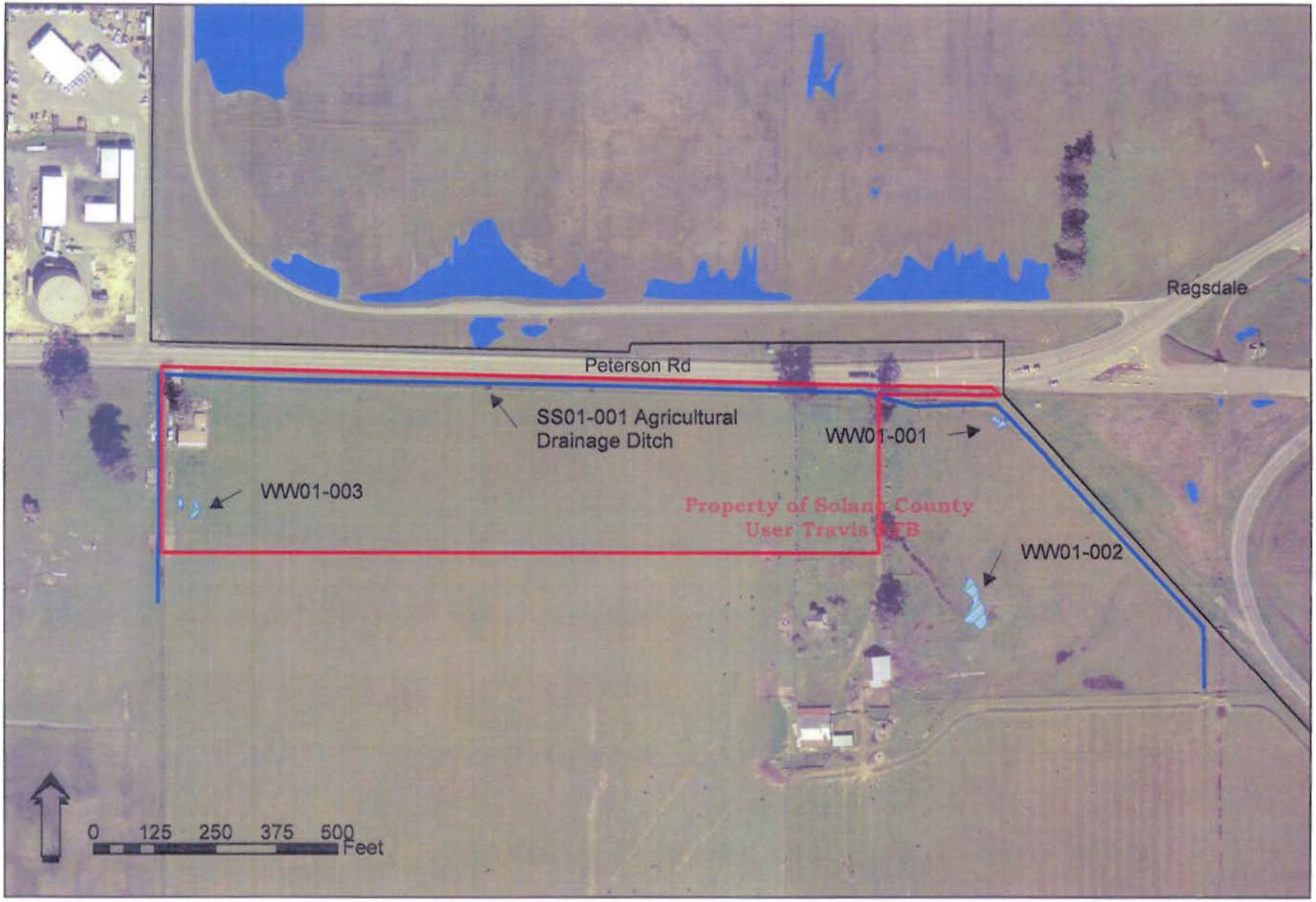

Figure 3-2
Delineated Wetlands and Waters of the United States
South Gate Improvement Project
Travis Air Force Base
Solano County, California

insurance rate zone that correspond to areas outside a 100-year floodplain (Federal Emergency Management Agency 1993 and 2005).

3.8 Biological Resources

Management and conservation of listed endangered and threatened species on military installations is required by the Endangered Species Act (ESA), DoD Instruction 4715.3 Environmental Conservation Program (3 May 1996) and Air Force Instruction (AFI) 32-7064 (Integrated Natural Resources Management (INRMP)). The ESA recognizes that many species of fish, wildlife and plants are in danger of, or threatened with, extinction. The ESA establishes a national policy that all federal agencies should work toward conservation of these species. The Air Force complies with the mandates of the ESA by identifying endangered and threatened species, and critical habitats or Air Force lands, and implementing programs for the conservation of these species, in coordination with the USFWS. Conservation management approaches for biological resources, including sensitive species, on Travis AFB is guided by the Travis AFB INRMP (USAF 2005).

Travis AFB

Travis AFB is located halfway between the coastal zone and interior valley provinces of California. The climate is Mediterranean with cool, wet winters, and warm, dry summers. Annual mean precipitation for the installation is 17.5 inches, of which 84% occurs between November and March.

Vegetation

Significant portions of Travis AFB are paved or otherwise impervious surfaces (i.e., runways, taxiways, ramps, roads, buildings, and parking lots). In addition, historic agricultural and livestock grazing practices on and around Travis AFB have degraded native biotic communities such that exotic annual species dominate the native perennial grasslands. The predominant community types are ruderal-disturbed and urban. There are some relatively pristine, but small habitat areas on the base, typically associated with vernal pools and riparian corridors along Union Creek. The biotic communities on Travis AFB may be broadly distinguished into terrestrial and aquatic types. Aquatic community associations at Travis AFB are classified into riparian wetlands, wet meadows, vernal pools, and lacustrine. Terrestrial community associations include annual grass/forbs, ruderal-disturbed, riparian corridors, and urban. Inventoried plants on Travis AFB include 53 families, 159 genera, and 252 species. Exotic species constitute 48% (120 species) of the installation flora.

The characteristic vegetative community at each of the gates on Travis AFB is provided in Table 3-8. A description of vegetative communities occurring near the South Gate and representative of vegetation in the proposed project area are provided in Table 3-8.

Table 3-8 Vegetation Communities at Travis AFB Gates and Adjoining Areas

Gate	Community Association	Description
Main	Urban/Ruderal-Disturbed	Landscaped vegetation
North	Urban/Ruderal-Disturbed	Gate is located east of North Gate Duck Pond, a riparian wetland/riparian corridor
Hospital	Urban/Ruderal-Disturbed	Landscaped vegetation
South	Urban/Annual Grassland	Areas mowed for flightline maintenance/agricultural areas
Forbes	Urban/Ruderal-Disturbed	Landscaped vegetation/agricultural areas

Annual Grass/Forbs. Grasslands are located primarily in the west and southwest portions of Travis AFB and comprise approximately 1,735 acres. The dominant species are exotic and include soft chess, Italian ryegrass, mouse-tail fescue, filaree, wild oat, ripgut grass and Harding grass. Most abundant wildlife species associated with grasslands are red-winged blackbird, ring-necked pheasants, northwestern fence lizard, gopher snake, and deer mouse. The majority of the grasslands on base are subject to mowing and discing as part of Travis AFB's Bird Aircraft Strike Hazard (BASH) program and provides firebreaks. In addition, the agricultural out-leasing program for livestock grazing utilizes the grasslands. As a result, native grasslands have been largely converted into monotypic stands of non-native species.

Vernal Pools. A relatively large number of vernal pools remain in the region, including on Travis AFB. A Nature Conservancy tract, the Jepson Prairie Preserve, established to protect vernal pools, is located 4 miles east of Travis AFB. Vernal pools and vernal swales occur throughout the installation, consisting of shallow depressions or small, shallow ponds that fill with water during the rainy season, drying out during spring and summer. Vernal pools account for up to 44% (110 species) of the total number of species on Travis AFB (despite being a minor habitat type). The vernal pool sites are either single, isolated pools, or hydrologically connected pool clusters, varying in size up to one acre. Plant species identified in the vernal pools include a mix of native and exotic species, including Pacific meadow foxtail, saltgrass, annual hairgrass, goldfields, round woolly marbles, popcorn flower, downingia, meadow barley, coyote thistle, hyssop loosestrife, spike rush, flowering quillwort, alkali milk vetch, and San Joaquin spearscale (Earth Tech 2000a, 2000b and 2001). Vernal pools may provide habitat for several species of crustaceans, most of which are protected under the ESA (Bio-Systems Analysis 1994). Vernal pools and vernal swales may also support a variety of amphibians.

Urban. This habitat is associated with nonnative landscaped vegetation, predominantly irrigated residential lawns throughout the housing and building areas. These areas are periodically subject to disturbance, such as mowing. Representative wildlife includes song sparrow, tri-colored blackbird, killdeer, house sparrow, western harvest mouse and California ground squirrel (USAF 2001a).

General Wildlife

The prevalent wildlife on Travis AFB includes mammals (particularly small mammals), birds, reptiles and amphibians, fish, and aquatic invertebrates. The following description of representative general wildlife is provided by the INRMP. Wildlife on base is generally limited by disturbed habitat and Air Force operations.

Mammals. There are 29 species of mammals on base, including deer mouse, house mouse, western harvest mouse, black-tailed jackrabbit, California ground squirrel, opossum, striped skunk, feral cats, coyote, red fox, muskrat, long-tailed weasel, raccoon, mink, beaver, and bobcat.

Birds. There are 153 species of birds on base, including 35 nesting species (USAF 2005). The red-winged blackbird is the most common species observed in all habitats and the greatest numbers of birds are found in the Union Creek riparian habitat. Twelve species are classified as species of special concern by the California Department of Fish and Game (CDFG), USFWS, or California Partners in Flight.

Reptiles. Fourteen reptile species have been identified on base. The northwestern fence lizard and gopher snake are abundant in a wide range of habitat types on base. Western pond turtles and California red-sided garter snake regularly occupy riparian habitat types.

Amphibians. There are six identified species of amphibian on base. The Pacific tree frog is the only common amphibian and is primarily associated with riparian and early successional habitat types. A single sighting of the California tiger salamander (CTS) has been documented. The introduced bullfrog is suspected on Travis AFB and, due to its highly competitive and predatory nature, would displace other amphibian species, especially disturbance-sensitive species like CTS.

Fish. There are ten identified fish species on base. Four recreational species of fish occur in North Gate Park Pond: large-mouth bass, bluegill, green sunfish and channel catfish. In 2001, Chinook salmon was first documented on Travis AFB.

Aquatic Invertebrates. Benthic and vernal pool invertebrates are the two groups of aquatic species found on Travis AFB. The predominant macrobenthic organisms identified in sediment samples of Union Creek include oligochaetes and chironomids. Sampling of 121 venal pools in the northwest portion of Travis AFB identified 33 different reported invertebrate taxa.

Threatened, Endangered, and Special Status Species

For the purposes of this project, special status plants and animals include species listed by the federal government as endangered, threatened, or rare; species that are proposed for federal listing as threatened or endangered; species noted as sen-

sitive or of special concern by the California Department of Fish and Game (CDFG); and plants occurring on Lists 1B and 2 of the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California.*

Species with federal listing on Travis AFB include one endangered, one threatened, two candidates and five species of concern. Table 3-9 identifies the threatened, endangered, and special status species that occur or potentially occur on Travis AFB.

Table 3-9 Special Status Species Occurring or Potentially Occurring on Travis AFB

Common Name	Scientific Name	Federal Status	State Status	CNPS Status	Habitat Requirement
Plants					
Contra Costa goldfields	Lasthenia conjugens	FE	None	List 1B	Drying borders of vernal pools and seasonally wet grasslands. Generally abundant in northwest corner of the Base and at southwest end of main runway.
Brittlescale	Atriplex depressa	None	None	List 1B	Grows in alkaline and clay soils below 500 feet. Scattered among vernal pools in northwest corner of the Base.
San Joaquin (valley) saltbush	Atriplex joaquiana	FSC	None	List 1B	Found in seasonally wet alkaline habitats, such as alkaline grasslands, below 1,000 feet. Occurs in northwest corner of the Base.
Alkali milk vetch	Astragalus tener var. tener	None	None	List 1B	Grows in seasonally moist areas with alkaline or adobe clay soil such as alkaline vernal pools, grasslands and playas, at elevations below 500 feet. Found scattered in vernal pools, northwest corner of the Base.
Amphibians					
California tiger salamander	Ambystoma californiense	FC	None	-	Grasslands and open oak woodlands and temporary ponds. One dead California Tiger Salamander was identified on the Base.
Birds					
Loggerhead shrike	Lanius ludovicianus	FSC	None	-	Grasslands and open meadows. Identified on the Base.
Western burrowing owl	Athene cunicularia hypugea	FSC	CSC	-	Grasslands, sometimes found in man-made structures such as storm drains and beneath cement and asphalt structures. Identified on the Base.
Long-billed curlew	Numenius americanus	FSC	CSC	-	Large vernal pools, temporary aquatic habitats. Identified on the Base.
Rufous hummingbird	Selasphorus rufus	FSC	None	-	Eucalyptus groves. Identified on the Base.

Table 3-9 Special Status Species Occurring or Potentially Occurring on Travis AFB

Common Name	Scientific Name	Federal Status	State Status	CNPS Status	Habitat Requirement
Fish					
Chinook salmon - Central Valley fall/late fall-run	Oncorhynchus tshawytscha	FC	SE	-	In 1999, designated as threatened for all naturally spawned spring-run, from the Sacramento San Joaquin River mainstem and its tributaries. First documented on the Base in 2001.
Invertebrates					
Vernal pool fairy shrimp	Branchinecta lynchi	FT	None	-	Found in vernal pools, sometimes found in a variety of temporary aquatic habitats such as roadside ditches. Adults and eggs found in vernal pools on Base.

Key:

Federal Listing:
- FE = Federally Endangered
- FT = Federally Threatened
- FSC = Federal Species of Concern
- FC = Federal Candidate Proposed for Listing
- List 1B = Plants rare, threatened, or endangered in California or elsewhere by the Federal Government

State/CNPS Listing:
- SE = State Endangered
- ST = State Threatened
- CSC = State Special Species of Concern

The CDFG identifies the spearscale and milkvetch, not listed on the table, as state species of concern (CDFG 2002). Due to the proximity of the threatened Colusa grass and endangered Solano grass in Solano County, these species may be present but remain undocumented on Travis AFB.

A variety of listed bird and mammal species occur in Solano County, but due to species-specific habitat requirements and the lack of suitable habitat at Travis AFB, these species do not occur on the base. Repeated biological inventories and ecological studies have not identified any threatened, endangered or candidate bird or mammals species on base.

Critical Habitat

The United States Fish and Wildlife Service (FWS) recently designated areas surrounding Travis AFB as critical habitat for 15 vernal pool species by final rule dated 11 August 2005 (70 Federal Register 46923). The FWS also recently designated critical habitat in California for the California tiger salamander (CTS) (70 FR 41183, 23 August 2005).

Proposed Project Area

Vegetation

The vegetation community occurring within the South Gate Improvement Project consists of disturbed pastureland with a variety of native and nonnative plant species. Field surveys completed in the summer of 2004 and 2005 identified several grass and noxious weed species. Common species observed included *Bromus* sp., *Hordeum* sp., *Lolium* sp., *Centaurea* sp. and *Polygonum* sp.

General Wildlife

Because of the proposed project area is immediately adjacent to the southwestern boundary of Travis AFB, it is assumed that wildlife species discussed above, particularly associated with grasslands, also have the potential to occur in the proposed project area.

Threatened, Endangered, and Special Status Species

While numerous biological resource inventories and analyses have been conducted at Travis AFB, including both general and species-specific or habitat-specific studies, none of these studies are specific to the proposed project area. Based on available records, United States Fish and Wildlife Service (FWS) information, and the CDFG California Natural Diversity database, the potential for special status species to occur in the vicinity of the project would be limited. Since surveys have not been completed and because the proposed project area is immediately adjacent to the southwestern boundary of Travis AFB, although declared by the U.S. Fish and Wildlife Service as critical habitat for various vernal pool species, it ~~is~~ cannot be determined with reasonable accuracy that the species in Table 3-9 may also occur in the proposed project area without T&E surveys. If future T&E surveys reveal the presence of species in Table 3-9, Travis AFB will consult with U.S. Fish and Wildlife Service to determine appropriate conservation measures.

3.9 Cultural Resources

The 1966 National Historic Preservation Act (NHPA) (Public Law 89-665, as amended by Public Law 96-515; 16 USC 470 *et seq.*) established the framework for federal review of federal undertakings for preservation of cultural resources. The Act authorized the formation of the National Register of Historic Places (NRHP), administered by the National Park Service (NPS), which establishes criteria for identifying significant cultural resources (as defined by the Secretary of the Interior's Standards for Evaluation [36 CFR 60]), awards them protection through legal status, and creates a catalogue of known resources. Significant resources include items such as prehistoric and historic archeological sites, buildings, structures, and artifacts that are significant in American history, architecture, archaeology, and culture.

Section 106 of the Act requires that federal agencies with jurisdiction over a proposed federal project take into account the effect of undertakings on cultural re-

sources listed, or eligible for listing, on the NRHP, and afford State Historic Preservation Officers and the Advisory Council on Historic Preservation an opportunity to comment with regard to an undertaking. Section 110, added to the Act in 1980, adds greater federal agency responsibility for consideration of historic properties during agency decision making, establishes procedures for federal agencies managing or controlling significant historic properties, and requires that each federal agency develop a historic preservation program that establishes how properties in their control will be maintained and managed and include procedures for implementing Section 106 (NPS 2005).

Travis AFB

In compliance with Section 110 of the NHPA, Travis AFB conducted a resources survey of undisturbed portions of the base and its discontiguous properties, including buildings greater than 50 years of age, in 1995. In 2003, the Integrated Cultural Resources Management Plan (ICRMP) was adopted to provide for effective management of cultural resources identified on the base and implementation of Section 106.

The survey identified 27 buildings eligible or potentially eligible for the NRHP due to their association with the Cold War-era (1945-1991). Previous surveys identified 10 archeological sites (three prehistoric and seven historic); however, the prehistoric sites no longer exist and the historic sites are ineligible for the NRHP. Therefore, there are no NRHP eligible, or potentially eligible, archeological sites on Travis AFB. The ICRMP provides a detailed overview of the cultural history of Travis AFB and inventory of resources identified.

Research shows that the Cortina Band of Indians and Wintun indigenous peoples may have been present near or within Travis AFB (USAF 2003a). However, during the development of the ICRMP and later updates, no response as been received from these groups, suggesting there are no areas of Native American concern on the base.

Proposed Project

In accordance with Sections 106 and 110, Travis AFB contracted Garcia and Associates to conduct a cultural resources survey of the proposed parcel for acquisition. The cultural survey report is provided in Appendix C. The survey included both a records and literature search and field surveys. The records and literature search included a review of the following references:

- California Inventory of Historical Resources (California Department of Parks and Recreation 1976);
- Five Views: An Ethnic Historic Site Survey for California (California Office of Historic Preservation);
- California Historical Landmarks;

- California Points of Historical Interest; and
- Historic Properties Directory Listing (includes the NRHP, the California Register of Historical Resources, and the most recent listings [through 8 February 2003] of the California Historical Landmarks and California Points of Historical Interest).

The record and literature search did not identify any cultural resources inventoried in the proposed project area (Garcia and Associates 2004). The search did indicate that portions of the proposed area have been previously surveyed; however, resources were either not discovered or are located outside of the proposed project area.

In the 12.4-acre where construction activities associated with the project will occur, Garcia and Associates conducted a pedestrian survey utilizing parallel transects at intervals varying from 15 to 25 meters. Due to the grassy nature of the area limiting ground surface visibility, vegetation was removed by hand in small areas to facilitate ground visibility. No historic properties were identified within the survey area (Garcia and Associates 2004). Examination of subsurface soils at the site also did not expose evidence of cultural material and the soil characteristics (hard packed, clay, and silt loam) indicate limited likelihood of subsurface resources. An agricultural ditch on the property was investigated for potential cultural significance; however, research revealed that the ditch was constructed sometime between 1953 and 1978 and is not considered a historic property.

In the remaining, eastern area of the parcel where no project activities are planned (4.97 acres), only a cursory inspection was performed. No historic properties were identified in this area (Garcia and Associates 2004).

3.10 Environmental Management

Pollution Prevention

Pollution prevention on Air Force installations is regulated by AFI 32-7080, which incorporates applicable federal, DoD, and Air Force regulations and directives for pollution prevention. Travis AFB prepared a Pollution Prevention Management Action Plan (P2 MAP) in 2001 to minimize or eliminate the use of hazardous materials and release of pollutants into the environment, such as asbestos, lead based paints, and fuels. In addition, other plans such as the *Integrated Contingency Plan* include measures for managing potential release of pollutants on the base.

Environmental Restoration Program

The Travis AFB Environmental Restoration Program (ERP) is administered by 60 CES/CEVR (Environmental Restoration Section). The goal of the Travis ERP is to remediate all accident/disposal/spill sites (from 1984 or

earlier) that may pose an immediate or potential threat to public health, welfare, or the environment. There are several ERP sites on Travis AFB, including landfills, fire protection training areas, spill sites, waste disposal sites, drum storage areas, leaking underground storage tanks (LUSTs) and piping, oil/water separators (OWSs), waste treatment plants, munitions disposal sites, and other areas.

ERP Site SD033, Storm Sewer System II, is located adjacent to the northeastern corner of the proposed parcel for acquisition (USAF 2005). Wastes at the site include paints, solvents, lubricants, soaps, engine oil, hydraulic fluid, and jet fuel. Primary contaminants include VOCs (TCE and 1-2-DCE) in groundwater, VOCs, PAHs, and metals in sediment and soil; from waste water discharges. Proposed remediation measures include groundwater plume control through pump-and-treat and natural attenuation assessment is being conducted. Proposed excavation of and disposal contaminated soils.

Geology

Solano County is located in the Great Valley geomorphic province, an approximately 50-mile wide by 400-mile long alluvial plain between the Sierra Nevada Range to the east and the terminus of the California Coastal Mountain Range to the west (California Geographical Survey 2002). The Great Valley was once a submerged marine basin west of the Sierra Nevada Range. The Sierra Nevada Range was uplifted when the Pacific Ocean plate was pushed below the continental plate, creating a deep ocean trench. After thousands of years of eroded materials from the Sierra Nevada Range being deposited into the marine trench, the Great Valley was formed. In the late Pliocene Epoch, major deformation uplifted the western part of the valley, creating the Coastal Mountain Range. The Great Valley is comprised of alluvial deposits underlain by the east-sloping Cretaceous and Cenezoic strata of the Coastal Mountain Range and the west-sloping bedrock of the Sierra Nevada Range. The Stockton Arch, a gentle ridge across the valley, divides the valley into the Sacramento Valley (north) and San Joaquin Valley (south). Solano County is located in the lower western portion of the Sacramento Valley.

Travis AFB and the proposed project are located on Quaternary Bay sediments north of Suisun Bay. The base is primarily underlain by older alluvium of the Pleistocene Age, comprised of sands, gravel, silts, and clays. These deposits extend up to 200 feet deep in the area, but are much shallower at the Travis AFB as evidenced by the outcropping of basement rocks at Potrero Hill. The alluvium unit is moderately permeable. Tertiary consolidated sediments with some interbedded volca-debris, the Tehama Formation (Pleistocene-Pliocene nonmarine sediments), and the Marekley Formation (Eocene marine sediments) underlie the older alluvium, but crop out at the surface in some areas of unconsolidated soils. These deposits reach depths up to 7,500 feet (AMC 2003).

Geological Hazards. Travis AFB and the proposed South Gate access upgrades are located in the seismically active San Francisco Bay Area. The major faults in

the area causing seismic activity include the San Andreas, Hayward, and Calaveras faults. Other potentially active, but smaller faults include the Green Valley-Concord, Greenville, West Napa, and Vaca System faults (UC Berkeley 2005). The Association of Bay Area Governments (ABAG) identifies the city of Fairfield as susceptible to moderate to strong faults based on the Mercalli Intensity scale (ABAG 2005a). However, neither Travis AFB nor the proposed South Gate access upgrades are located on or near these faults (the closest fault, Green Valley-Concord, is approximately 10 miles west). The potential for liquefaction due to an earthquake is unlikely in this area (ABAG 2005b).

Soils

The Great Valley is known for its fertile soils. Solano County is comprised of 17 soil associations that are classified into four groups based on slope and drainage characteristics (EE 2004). Travis AFB is comprised of 14 soils associations. Soils on the base have been significantly altered by heavy construction and by imported fill and, as a result, do not exhibit typical characteristics of the mapped soils. For example, typically well-drained soils are no longer well-drained due to compaction.

The proposed South Gate access improvement area is comprised solely of Antioch-San Ysidro complex, 0 to 2% slopes as mapped by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS 2005) (see Figure 3-3). This soil complex formed in alluvium from sedimentary sources and is composed of about 50% Antioch loam, 35% San Ysidro sandy loam, and 15% Solano loam and Pescadero clay loam. The surface layer soil (0 to 5 inches) can be characterized as light brownish-gray (10 YR 6/2) loam with common, fine, distinct mottles (10 YR 5/6). Below the surface layer soil (5 to 14 inches) soil is brown (10 YR 5/3) with few, fine, distinct mottles (10 YR 5/6). Moist soils for both layers are described as strong-brown (10 YR 4/2 or 3/3). These soils have been described as having a very slow runoff (EE 2004b). This soils series is classified as hydric because these soils frequently pond for long or very long duration during the growing season (NRCS 2004).

3.11 Indirect and Cumulative Impacts

The CEQ defines indirect impacts as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable 40 CFR 1508.8." Indirect effects may include growth-inducing effects that result in changes to population density or growth rate and employment and effects that impact the natural environment. Cumulative impacts are defined by the CEQ regulations for implementing NEPA as "the impact on the environment which results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions regardless of what other agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7)."

For the purposes of this analysis, Travis AFB and planners at Solano County and the cities of Fairfield and Suisun were contacted to identify reasonably foreseeable actions. Consequently, the focus of this cumulative impact analysis is on projects occurring within Travis AFB and projects occurring within a 1-mile radius of the project site. The time frame for cumulative effects would start in 2006 and continue to 2007, when the Proposed Action would be fully implemented.

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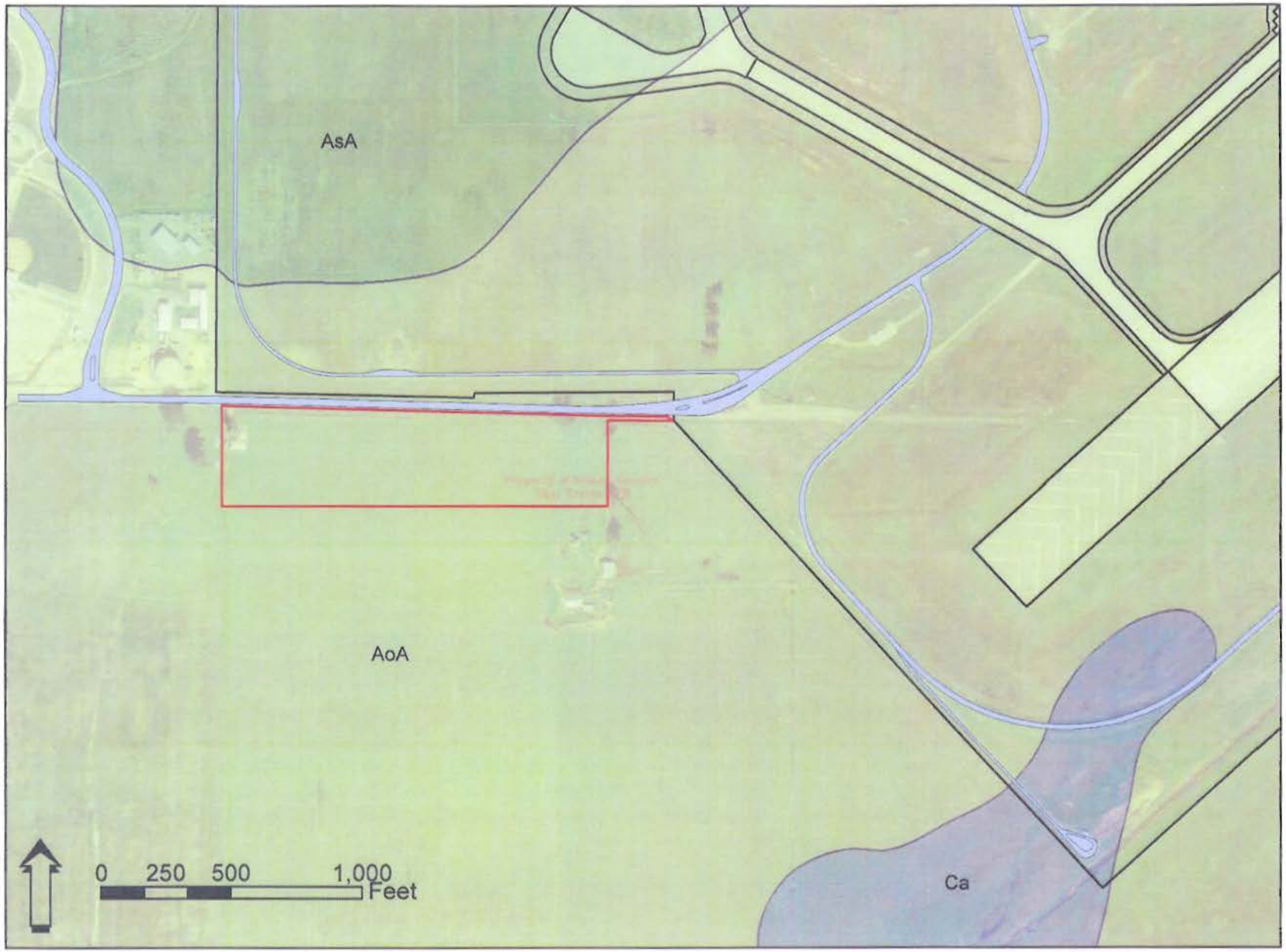

Figure 3-3
SSURGO Soils
South Gate Improvement Project
Travis Air Force Base
Solano County, California

Projects Planned in the Reasonably Foreseeable Future

Travis AFB

There are 17 projects at Travis AFB planned for implementation during fiscal years 2006 and 2007 that would potentially overlap with the proposed project. Of these projects, the four projects listed in Table 3-10 occur within 1 mile of the proposed project.

Table 3-10 Travis Air Force Base Planned Projects in the Vicinity of the South Gate Improvement Project during Fiscal Years 2006 and 2007

Project	Proximity to Proposed Project	Size	Status
C-17 Roads/Utilities	Large project area that extends up to the South Gate	2.3 acres	Project is approved and funded. Construction to begin in 2007.
C-17 Taxiway Lima (demolish and replace taxiway)	Within 1 mile of the project	2.75 acres	Project is approved and funded. Construction to begin in 2007.
C-17 Infrastructure	Within 1 mile of the project	2.3 acres	Project is approved and funded. Construction to begin in 2007.
(install cable and bollards along perimeter)	Various locations around the base boundary, including the South Gate	20 miles	Project is in review and planning stage. Construction unlikely within four years.

Other projects that are approved and funded on Travis AFB and will be constructed in the next two years, but are greater than one mile from the project area include construction of a the C-17 Maintenance Training Facility, C-17 Composite Shop, Munitions Storage Facility, and C-17 Two Bay Hangar.

Region

There are three projects in Suisun City within one mile of the project area that may overlap with the proposed projects if there are no changes to project status (i.e., delay of permits or construction). These projects are described in Table 3-11.

Table 3-11 Projects Within the Vicinity of Travis AFB

Project	Proximity to Proposed Project	Size	Status
Hardware and Building Supply Store	415 Walters Road Approximately 1 mile west of site	.13 acres	Building permits in review. Activities to start November 20005.
Aloha RV, Boat, & Self Storage	1600 Peterson Road Approximately 1 mile west	2.7 acres	Building permits in review. Activities to start January 2006.

Table 3-11 Projects Within the Vicinity of Travis AFB

Project	Proximity to Proposed Project	Size	Status
Peterson Ranch Housing Development	Montebello Drive, north to East Table between Walters Road and Travis AFB	44 acres	Remaining approximately 90 units to be built out of 570 units on 44 acres out of total 180 acres housing development. Grading and infrastructure construction to expected to begin December 2006.

Source: Young 2005.

There are several other projects in the vicinity of the project area, but greater than two miles away, including construction of Manual Campos Expressway (north of Airbase Parkway), expansion of Peabody Road, construction of Fairfield Corporate Commons (just east of I-80), and Village at Fairfield housing development north of Airbase Parkway).

4 Environmental Consequences

This section describes the potential consequences to environmental resources and conditions of the proposed action and no-action alternatives.

4.1 Land Use

Proposed Project

The current location of the South Gate entrance is incompatible with approved uses and facility siting as required by Air Force Manual 91-201 "Explosives Safety Standards" because it is located in the Q-D Arc area. The proposed project would relocate the entrance out of the Q-D Arc and therefore positively affect land use on the base.

The project would result in the permanent conversion of 12.4 acres of land from Extensive Agricultural use to Public Use. This loss of agricultural land is well below 1% of the total land dedicated to agriculture in Solano County. Furthermore, the parcel is not classified as Prime or Unique Farmland, or Farmland of Statewide Importance (California Department of Conservation 2005). The land is currently not used for agriculture (i.e., no irrigation or crop production). Conversion of this land would not result in a pocket of non-agricultural land among otherwise agricultural and open space uses, a key concern for LAFCO, as it is an expansion of an existing facility. As a result, the project would not impact the agricultural productivity or overall land use of the region.

Land Use Plans and Policies

Travis AICUZ. The proposed project would locate the South Gate facilities farther from base activities by 1,500 feet. The project would not be located in a CZ or APZ. The project would not result in increased noise hazards that could affect current land use on or off base. Therefore, the project is consistent with this plan.

Solano County General Plan Land Use and Circulation Element. The proposed project would require redesignating the land use classification from Extensive Agricultural to Public Use. The county could either administer this change and retain the area in its jurisdiction, or require that the area be annexed into the incorporated area of Suisun (Smalley 2004). Consistent with allowable activities

in unincorporated areas, the project would improve the health, safety, and welfare of Solano County's residents by relocating the entrance out of the Q-D Arc area and thereby reducing their exposure to potential hazards. Relocation of the gate and expansion of entrance facilities would not introduce hazards that would be incompatible with existing land use surrounding the base.

Additionally, redesignation of the area to Public Use is a compatible land use and would preserve the area around the base to activities conducive to Travis AFB, as required by the general plan. Furthermore, the project is unlikely to inhibit future, other, use of this area by the county or city of Suisun because allowable land uses in this area are highly restricted due to noise and safety hazards. As a result, the future use of this area as anything other than public, agricultural, or open space would be unlikely.

The project would impact agricultural land, which the county is dedicated to preserving; however, as described above, the loss of agricultural land would not be significant. Furthermore the land is not currently used for agricultural operations.

Travis AFB Land Use Compatibility Plan. The project would be compatible with this plan because it would not introduce a new activity or land use that is incompatible with Zone C. The project would simply result in an increase of the same activities that currently occur in this area (increased vehicle use at the South Gate).

City of Suisun Land Use Element. Should the county require that this parcel be annexed by the city of Suisun prior to development, the area would need to be rezoned from Agriculture Open Space Reserve to Highway/Commercial. Similar to Solano County, zoning in the vicinity of Travis AFB is unlikely to change in the future due to aircraft operations and safety concerns. Therefore, the expansion of Travis AFB into this area would be compatible with allowable use in this area and would not inhibit other future development.

California Land Conservation (Williamson) Act.
The parcel proposed for acquisition is covered under a Williamson Act contract. Government Code 51295 indicates that such contracts are automatically voided when the property is acquired by the federal government in eminent domain or in lieu of eminent domain. If the property is acquired by the federal government other than by eminent domain or in lieu of eminent domain, the Air Force would need to address the continued applicability of the contract.

No-Action Alternative

Under the no-action alternative, there would be no change to off-base land use. However, the location of the South Gate would continue to be incompatible with the Air Force Manual 91-201.

4.2 Socioeconomics

Proposed Project

The proposed project would not impact base, local, or regional population or employment. Construction activities related to the South Gate improvement would provide jobs during construction, but the project will be minor in magnitude and short-term in duration. To the extent feasible, local contractors would be utilized to complete the work.

No-Action Alternative

Under the no-action alternative, there would be no change to socioeconomic conditions.

Environmental Justice

Proposed Project

The proposed project would not have distinct negative impacts that are disproportionately adverse to a minority or low-income population. Although there are census tracts surrounding the project area that exhibit minority and low-income population concentrations above those of the county/state/nation, due to limited scope of work and short-term nature of the proposed action (Alternative 1), impacts to these populations are not anticipated

No-Action Alternative

Under the no-action alternative, there would be no environmental justice impacts.

4.3 Traffic and Transportation

Proposed Action

The proposed project would cause an increase in traffic on Peterson Road and the roadways leading to Peterson Road during construction due to construction-related vehicles and equipment accessing the project area. Construction traffic has the greatest potential to impact traffic during peak hours and would be less significant throughout the day. However, only a limited number of construction-related heavy equipment vehicles are anticipated and they would be transported to the construction site only once (remaining on site for the project duration). POV access by construction workers would also be limited and is not anticipated to have a significant impact on traffic congestion. As reflected in Table 3-4, Peterson Road is not a congested road and is capable of handling significantly more traffic (Harms 2005). Since traffic congestion is not an issue on Peterson Road or at the South Gate entrance, the limited and short-term increase in construction-related traffic is not anticipated to be significant. Once the project area is graded, most activity will occur south of Peterson Road, further reducing potential traffic congestion. Access to the South Gate entrance would be maintained throughout construction and activities would not require temporary lane closures.

Increased use of the South Gate entrance would increase traffic on Peterson Road and the roadways connecting to Peterson, including, Pennsylvania Avenue, North Texas Street, Dover Avenue, Sunset Avenue, Walters Roads, Air Base Parkway, East Tabor Boulevard, Travis Boulevard, and State Route 12. As shown in Table 3-4, several of these roads are heavily used; however, the Level of Service (LOS) on the roads does not exceed Solano County's objective for traffic conditions of LOS D or better (Harms 2005). Traffic would access the South Gate entrance via different routes along these roads, which would distribute additional traffic, thereby reducing the percent increase on any one road. As a result, increased traffic on these roads is not expected to change the current LOS. The four eastern most roads of the road network to the west and southwest of the base that would be used to directly access the South Gate entrance are Peterson Road, Sunset Avenue, Walters Road, E. Tabor Avenue, and State Route 12. These roads are capable of handling a significant increase in traffic (Harms 2005). As a result, increased traffic on these roads would not have a significant impact on traffic congestion and flow. On the contrary, it may help alleviate heavy traffic on roads used to access gates on the north side of the base.

In the long-term, implementation of the proposed project would ultimately benefit traffic circulation on and around Travis AFB. By relocating the South Gate entrance out of the Q-D Arc area and expanding and creating new facilities, all commercial vehicle traffic would be able to use this gate. This would redirect commercial traffic away from the other gates that experience significantly more traffic (refer to Table 3-5) and congestion during peak hours (Gannett and Flemming 2004). If the South Gate entrance is opened to POV access, traffic congestion at the other gates would be even further reduced. Expanding capabilities at the South Gate entrance to POVs would also improve regional access to the base by providing access for POVs and emergency vehicles from south of the base. In particular, access would be improved for commuters from communities to the west, southwest, and south, such as Fairfield, Suisun City, Vallejo, etc., which are projected to experience extensive future growth (largely within their developed areas) (USAF 2003b). Commuters from these areas could access Travis AFB along State Route 12 (which is currently under utilized east of Pennsylvania to Travis AFB) instead of I-80, thereby alleviating traffic on I-80 and Air Base Parkway (Harms 2005). Finally, additional capacity at the South Gate entrance would improve transportation system infrastructure at Travis AFB and help meet the needs of increased traffic at the base in the future.

In the next few years, the City of Fairfield has plans for two major transportation projects that would also foster improved transportation and traffic conditions in the project vicinity, including construction of the Manual Campos Expressway (just north and parallel to Airbase Parkway) and widening Peabody Road to four lanes. These projects are discussed in Section 4.11- Cumulative Impacts.

No Action

Under the no-action alternative, traffic congestion would continue at the other gates and on roads leading up to them. In addition, the no-action alternative would not address the lack of regional access or provide the base with flexibility to accommodate a future increase in traffic if the mission of the base should expand or grow.

4.4 Air Quality

Proposed Action

The project would have a temporary and short-term impact on local air quality during construction. The primary impact would be the generation of particulate matter (fugitive dust) during activities such as clearing, grading, and hauling; demolition of the existing buildings; vehicles traveling in unpaved surfaces; and by wind erosion on stockpiled materials. Additional temporary emissions would also occur during asphalt paving operations and from exhaust generated by construction equipment and personal vehicles. Pollutants that would be emitted from construction vehicle and equipment exhaust include NO_x, CO, PM_{10}, and VOCs. A projection of the temporary emissions during construction is provided in Table 4-1 (see Appendix A for totals calculations).

Table 4-1 Total Projected Emissions from Construction Activities During a 1-Year Period

Activity	Construction Emissions				
	VOCs	NOx	SO_2	CO	PM_{10}
Construction Emissions					
Grading Equipment	0.11	1.03	0.07	0.22	0.09
Material Hauling	0.16	2.28	0.15	0.49	0.16
Fugitive	0.00	0.00	0.00	0.00	2.24
Total Emissions from Construction (Tons)	**0.27**	**3.31**	**0.22**	**0.72**	**2.49**

Based on the calculations provided in Table 4-1, the projected emissions from the proposed action would be significantly less than the General Conformity Rule *de minimis* levels (see Table 3-6) of 100 tons per year of VOCs or NO_X, and, therefore, the project is exempt from further General Conformity Rule evaluation and a conformity determination is not required. Although these emissions are not significant, Travis AFB would implement measures identified in the base's INRMP to control dust during construction, such as treating unpaved access roads and areas with water or organic-based soil stabilizers during heavy use and controlling vehicle speed on unpaved surfaces. The EPA estimates that watering programs can significantly reduce fugitive dust emissions (AMC 2003). As a result construction of the proposed project would not significantly affect air quality.

While the proposed project would result in an increase in the number of vehicles using the South Gate entrance, there would not be a net increase in the number of vehicles entering the base, just a redistribution of gate use. As a result, there

would not be a long-term increase in mobile emissions associated with the project. The proposed action would also not result in the addition of any stationary emission sources.

No-Action Alternative

Under the no-action alternative, no activities that would affect air quality would occur.

4.5 Noise

Proposed Action

During the approximately one-year construction period, noise levels may increase slightly. However, because construction would generally take place during the daytime and would be within background noise levels resulting from Travis AFB's military aircraft operations, there would not be a significant increase over existing noise levels. Therefore, noise levels associated with project construction would not be significant. Implementation of the proposed project would not contribute to a permanent noise increase in the environment in and around the base.

No-Action Alternative

Under the no-action alternative, there would be no changes to the noise environment on base or in the surrounding communities.

4.6 Hazardous Materials and Waste Management

Proposed Action

Hazardous Materials

Hazardous materials would be used and waste generated during project construction. Equipment required for construction contains hazardous materials such as gasoline, diesel, oil, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Such materials would be used, handled, and stored in compliance with applicable requirements and the plans discussed in Section 3.6, to ensure that there are no negative impacts due to the limited use of these materials during construction. There is potential for spills from equipment to occur, which could result in the release of hazardous materials to surface waters and other sensitive features (e.g., sensitive habitat). Travis AFB would implement the measures identified in the plans described above to facilitate timely response to spills and proper containment, clean-up, and disposal of generated waste. Travis AFB would require that all contractor personnel receive training on implementation of the measures in these plans. As a result, potential impacts associated with spills would be minimized.

Hazardous Waste

Hazardous waste may be generated on the project if a spill occurs and during demolition of the existing buildings. However, due to the limited use of hazard-

ous materials and minimal amount of demolition to occur, only a negligible quantity of hazardous waste would be generated. Hazardous wastes generated during construction would be handled and disposed of in compliance with applicable regulatory requirements and plans. Hazardous waste would be characterized prior to disposal, as necessary. In addition, construction personnel would be trained in appropriate disposal of hazardous wastes.

Hazardous materials used and waste generated during O&M of project facilities would be handled by the same means as existing materials used on Travis AFB. As a result, the project would not result in a significant impact to public health, safety, or the environment due to the use of hazardous materials or generation of hazardous waste.

No-Action Alternative

Under the no-action alternative, there would be no change to the quantities of hazardous materials used or waste generated and management of these substances.

4.7 Water Resources

Proposed Action

Surface Waters

Of the four surface waters identified in the 12.4-acre parcel described above, only two of these features, one agricultural drainage ditch and one wetland, occur in the proposed 13.63-acre project area.

Agricultural Drainage Ditch. A 1,942-foot portion of SS01-001 (1.115 acres) occurs in the proposed project area, running along the western and northern boundaries (see Figure 3-2). As described in Section 3.7, flow in this waterway is seasonal and it is no longer used for irrigation. Construction of the proposed project will disturb the banks of SS01-001. Disturbance will be limited to locations where culverts would be installed (discussed below), where Peterson Road is realigned, and potentially where it runs along the western boundary of the project in-front of the existing house that would be demolished. Travis will minimize disturbance to the banks to the greatest extent feasible and restore the banks to preconstruction contours or more stable contours.

Construction of the proposed project could result in a temporary increase in sedimentation into SS01-001 or downstream should loosened soils run-off the project site into SS01-001 during a storm event, which could indirectly affect water quality. However, Travis AFB anticipates constructing the project outside of the rainy season (October to April), which decreases the potential for storm water run-off. Should activities occur during the rainy season or a storm event is predicted during project construction, Travis AFB would implement best management practices (BMPs) identified in the base's Stormwater Pollution Prevention Plan (SWPPP) to minimize potential impacts, as applicable.

Examples of best management practices that could be implemented include, but are not limited to:

- Conducting grading activities and installing culverts during the dry season to the greatest extent possible;
- Avoiding stockpiling spoils generated during construction in or near SS01-001 to prevent sedimentation into SS01-001. Covering piles of loose materials and exposed earth with weights and plastic or canvas tarps or using berms or silt fence to capture dirt that could be washed away by rain;
- Slowing the velocity of run-off as much as possible through methods such as vegetation, water bars, check dams, retention basins, gravel berms, hay bales, wattles, brush covering, and terracing;
- Protecting exposed areas and preventing flow from crossing disturbed areas through methods such as the use of interceptor dikes and swales and diverting flow into natural grass-lined drainage courses, ditches, or culverts;
- Restoring banks where they are temporarily disturbed by construction activities to preconstruction contours or more stable contours as soon as possible following construction;
- Keeping the work and storage areas neat and orderly to prevent the discharge of pollutants into storm water; and
- Implementing measures described in the *Integrated Contingency Plan* to minimize potential impacts to due to the release of hazardous materials.

With the implementation of BMPs when necessary and given the relatively flat topography, limited area of disturbance, and that construction would occur during the dry season, the potential for significant storm water run-off that could affect SS01-001 and downstream water surfaces is minimal. As a result, construction of the project would not have a significant impact on surface waters or water quality in the project area.

The project would permanently impact 0.178 acre of SS01-001 where Travis AFB would install four culverts in the agricultural ditch where Peterson Road will be re-aligned and paved. Figure 2-2 illustrates the location of potentially paved areas and roads where culverts may be located. In total, approximately 311 feet of culvert would be installed along with 1,000 cubic yards of fill. The culverts would be installed during the dry season to prevent impacts to seasonal flow in the agricultural drainage ditch. If water were present while the culverts are installed, BMPs from the base's SWPPP would be implemented as applicable. The culvert will be designed to accommodate high flow and prevent erosion at the intake and

discharge of the culvert. Given the limited area of permanent disturbance (0.178 acre) and that the installation of the culverts would not affect the overall drainage patterns and hydrology in the area, this permanent impact to SS01-001 is not considered to be significant.

Wetlands. As shown in Table 3-8 and in Figure 3-2, WW01-003 is the only wetland in the proposed project area that could be affected. However, the wetland would not be directly impacted because there are no construction activities in the immediate vicinity of the wetland. The nearest activity is the demolition of the existing house, which is approximately 100 feet north of the wetland (refer to Figure 3-2). Travis AFB will ensure that materials are kept well outside of the wetland. WW01-003 could be indirectly impacted if loosened-soils from the project site are deposited in the wetland. However, since the project will be constructed during the dry season, Travis AFB will implement BMPs to minimize erosion and sedimentation when necessary, and the project area is relatively flat area, storm water run-off is not anticipated to be a significant issue. Therefore, the project will not impact any delineated wetlands.

Groundwater

Construction of the proposed project facilities and demolition activities would not result in withdrawals from or discharges to groundwater. As a result, there would be no impact to groundwater resources. Groundwater is not expected to be impacted by excavation activities given the limited extent of excavation required for facility foundations (a few feet deep) and that the project will be constructed during the dry season.

Floodplains

The proposed project area is not located within a 100-year floodplain. As a result, there is little potential for constructed project facilities to be adversely affected in the event of a flood. The west branch of Union Creek, an existing floodplain area on Travis AFB does not run through the project area and, thus, flooding of this channel would not affect project facilities. Although there would be a small increase in impervious surface in the area (5.30 acres will be paved), additional run-off from the site would be absorbed by adjacent vegetation and would not contribute to flood conditions.

No-Action Alternative

Under the no-action alternative, no activities would occur that could affect water resources. As a result, there would be no impact to existing surface, groundwater, or flood conditions.

4.8 Biological Resources

Proposed Action

Vegetation Communities

Given the historic agricultural use of the proposed project area, vegetation in the area is not pristine. Nevertheless, existing vegetation would be mowed during construction as necessary to facilitate construction and prevent fire hazards. However, the majority of the project area would not be paved (only 5.30 acres of the proposed 12.4 project site would be paved where facilities will be constructed and Peterson road will be realigned) and vegetation will be preserved to the greatest extent possible. Areas of the site that will only be temporarily disturbed during construction (i.e., not paved), will be restored. Restoration in temporarily disturbed areas will include restoring topsoil (which will be salvaged during grading activities) and seeding the areas to promote revegetation, and landscaping. Given the limited permanent loss of vegetation and revegetation of temporarily disturbed areas, impacts to vegetation are not considered to be significant.

General Wildlife

Due to the historic agricultural use in the proposed project area, lack of quality habitat such as a riparian corridor or native grasses, and limited wetland/vernal pool features, the proposed project site only provides low-quality wildlife habitat to common species that would be particularly adapt to disturbed areas. As a result, implementation of the proposed alternative is not expected to significantly impact general wildlife.

Threatened, Endangered, and Sensitive Species

As described above, the proposed parcel for acquisition has not previously been surveyed for special status species and was not surveyed for this project. As a result, Travis AFB is assuming presence for sensitive species when the associated habitat is found and forgoing formal plant and animal surveys because of the time that would be involved to conduct those surveys.

The potential for sensitive plant species identified in Table 3-9 are unlikely to occur in the project area due to the historic agricultural use of the project area and absence of vernal pools. The potential for special status birds and mammals to occur on the real property parcel is also unlikely due to species-specific habitat requirements and the lack of suitable habitat due to the disturbed condition of the site. Western burrowing owl, a federal and state species of concern, would not be expected to occur at the proposed gate area due to the disturbed condition of the site.

To ensure that impacts to sensitive species are avoided or minimized, Travis AFB will survey the project area prior to starting construction activities to verify that no such species are present. If sensitive species are identified, Travis AFB will consult with the applicable agencies to determine avoidance and mitigation measures.

Critical Habitat

The proposed project site is included in an area designated by the USFWS as critical habitat for vernal pool species. However, there are no project activities planned in the area of the parcel where vernal pools are located (see Figures 3-2). As a result, the proposed action would not impact vernal pools or associated species. If Travis AFB proposes future activities that could affect the vernal pool, Travis AFB would consult with the USFWS prior to additional activities.

The proposed project site is not within an area designated as critical habitat for the CTS. However, agricultural drainage ditch SS01-001 contains wetland plant species and may provide water habit for the CTS. Because of this potential habitat, Travis AFB is assuming the presence of CTS in the proposed project area. The re-alignment of Peterson Road and construction of new facilities at the South Gate will impact 0.178 acre of SS01-001 (area of permanent impact where culverts would be installed) and approximately 5.3 acres of potential upland habitat (area that would be paved for facility installation) that could be used by CTS.

To avoid impacts to CTS migration across the site, curbing would be installed to exclude them from the paved areas and channel them around the site. This design future is in accordance with the base's INRMP that requires all construction projects to be designed in a way that reduces impacts to sensitive species. In addition, Travis AFB will formally consult with the USFWS to ensure that the proposed project would not jeopardize the continued existence of the CTS in accordance with Section 7 of the ESA. If conservation measures for the CTS are required as a result of Section 7 ESA consultation, Travis AFB proposes to construct a 900-foot long drainage ditch of similar design to Agricultural Drainage Ditch SS01-001 along the southern edge of the property, connecting the east and west channels of the existing ditch. This will create a single, connected ring of potential CTS habitat and migration path around the project site. This new habitat of 0.517 acre would offset potential adverse effects to the CTS from the project.

No-Action Alternative

Under the no-action alternative, no activities that would potentially affect biological resources would occur. As a result, there would be no impact to existing biological resource conditions.

4.9 Cultural Resources

Proposed Action

Implementation of the proposed project would not result in any impacts to known cultural resources because no historic properties were identified in the project area. Subsurface resources could potentially be discovered during grading and excavation operations; however, the potential to encounter significant subsurface cultural materials is extremely low (Garcia and Associates 2005). In the event of an unanticipated discovery, the material would be considered potentially eligible

for listing on the NRHP and Travis AFB would follow the procedures outlined in 36 CFR 800.13(b) and in the ICRMP.

Due to the cursory nature of cultural investigation in the area of the parcel east of the proposed 12.4-acre project area, future activities in that area should not occur until additional surveys are completed.

No-Action Alternative

Under the no-action alternative, no activities with potential to affect known culturally significant properties on Travis AFB would occur. Additionally, there would be no ground-disturbing activities that could reveal and potentially impact subsurface materials of potential significance.

4.10 Environmental Management

Pollution Prevention

The proposed project will be constructed in accordance with Travis AFB's P2 MAP, including minimizing the use and disposal of hazardous materials, minimizing the release of pollutants into the environment through the numerous methods discussed above, such as controlling vehicle emissions and spill preparedness and response, and implementing design techniques at the new facilities that conserve energy.

Asbestos and LBP will not be used during construction. However, there is potential during demolition of the existing house. Travis AFB will evaluate the potential for asbestos or LBP at the house prior to demolition. If such materials are identified, Travis AFB would properly inventory, remove, and relocate or dispose of the materials prior to demolition. As a result, implementation of the proposed project is not expected to impact pollution prevention at Travis AFB.

Environmental Restoration Program

The proposed action is not expected to affect or be affected by ERP Site SD033. Design and construction activities will be coordinated with appropriate Travis AFB personnel to ensure that construction would not interfere with cleanup activities at the site.

As described in Section 3.6, no contaminated sites that would require environmental restoration or preventative measures were identified in the proposed project area. As a result, implementation of the proposed project is not expected to impact Travis AFB's ERP site.

Geology

Proposed Action

The proposed project would not result in any substantial changes to physiographic features, affect ground elevation, or involve significant excavation work. Travis

AFB and the proposed project area are not prone to significant geological hazards. Although the base and project are located in an seismically active area, the proposed facilities would be designed and constructed to withstand significant damage in the event of an earthquake and, therefore, minimize potential harm or injury to people working in entrance facilities or using the entrance. As described above, the proposed project is in an area with low to no potential for liquefaction. As a result, it is unlikely that building foundations would be compromised should an earthquake occur, nor would soils be damaged. Finally, there is no potential for a landslide to impact South Gate facilities or its occupants given the flat topography of the area (elevation only ranges from 15 to 200 feet above mean sea level) (USAF 2005).

No-Action Alternative

Under the no-action alternative, there would be no change to the current conditions at Travis AFB that would result in impacts to the geological characteristics of the area or be affected by geological conditions.

Soils

Vegetation clearing and grading would increase the susceptibility of soils to erosion during construction and post-construction in areas that are not paved until soils are stabilized. Again, due to the flat terrain in the area, minimal grading required, and that the project be construction is anticipated to occur during the dry season, erosion is expected to be minor and the potential loss of soil insignificant. Soils in the area are well drained, which would contribute to higher water absorption than run-off. As discussed in Section 4.7, Travis AFB will implement BMPs described in its INRMP and Storm Water Pollution Prevention Plan, as appropriate, to prevent, minimize, and control soil erosion. Implementation of dust control measures (when necessary), such as watering, would also protect soils from wind erosion. As a result, temporary impacts to soil and potential loss of soils due to erosion would not be significant.

There would be a permanent impact to 5.30 acres of soil where paving will occur. Topsoil would be salvaged in all areas disturbed by project activities and reused for landscaping the project area. This increase in impervious surface would not result in flooding or additional run-off during storm events due to limited extent of paving and relatively flat topography of the project area. Therefore, the project would not result in a significant impact to soils.

No-Action Alternative

Under the no-action alternative, no activities would occur that would affect soils in the project area.

4.11 Indirect and Cumulative Impacts

The potential indirect impacts of the proposed project were addressed as applicable in the analysis of impacts to resources in the preceding sections. The project is not expected to have significant, indirect impacts to resources in the project

area. The project would not result in growth-inducing impacts as it will not induce population growth or employment opportunities, or otherwise affect socioeconomics in the area.
Cumulative effects are most likely to occur when the proposed project is related to other projects that may occur in the same or overlapping geographic location or at the same or a similar time. The following questions were considered in identifying the potential for cumulative impacts in this EA:

Would the proposed project affect or interact with the same resources that have been or would be affected by present or reasonably foreseeable actions? If so, would the proposed project affect or be affected by the impacts of the other action?

If an interrelationship exists between the proposed project and other present or reasonably foreseeable actions, are there any potential significant impacts not identified when the proposed project is considered alone?

As discussed in Section 4 and summarized in Table 2-2, the project would not impact cultural, geologic, or socioeconomic (and therefore environmental justice) conditions or affect Travis AFB's pollution prevent and environmental restoration programs. As a result, the project would not contribute to a cumulative effect to these resources.

The project would have short-term, construction-related impacts to air quality, noise, hazardous materials and waste management, water resources, biological resources, transportation systems, and soils. Impacts to these resources in the general project area could be magnified when combined with the other projects proposed within one mile of the project (refer to Table 3-10 and 3-11). Construction of the projects planned in Suisun City would be similar to the proposed project, including limited grading and construction of buildings in a non-linear site. Therefore, it is anticipated that these projects would have similar, short-term resource impacts during construction. Travis AFB will implement measures and best management practices to prevent and minimize impacts and it is anticipated that the proponents of the other projects would do the same. As a result, given the temporary nature of construction related impacts and that the significance of such impacts would be reduced through control measures, the cumulative effect of the proposed projects and nearby projects on these resources is not anticipated to be significant. The projects on Travis AFB are of a more linear nature that the proposed project and are anticipated to result in the generation of substantially more waste (largely asphalt). Again, Travis AFB would implement measures to reduce the construction impacts of these projects and properly dispose of waste, minimizing potential cumulative effects.

The project would also have a permanent impact on hazardous materials and waste, water and biological resources, land use, transportation systems, and soils.

The potential cumulative impacts to these resources in conjunction with the other planned nearby projects include the following.

Hazardous Materials and Waste. The permanent increase in hazardous materials and waste generated on-site during operation of the project would be minimal and insignificant and the same is anticipated for the nearby projects. Therefore, a significant cumulative impact is not expected.

Water Resources. The permanent impact to water resources is limited to the installation of culverts in the project area.. The other base projects, based on their locations, are not anticipated to permanently affect any major waterbodies. As a result, cumulative impacts to water resources are not expected to be significant.

Biological Resources. The project would result in the permanent loss of a small area of vegetation. With the exception of the Peterson Ranch Housing Development which would disturb a fairly large area, the loss of vegetation at the other project sites would also be limited. The other projects will occur in disturbed areas where vegetation is also not likely to be pristine due to historic and current land use. In the case of the projects on base, they would primarily occur in disturbed and paved areas. As discussed above, Travis AFB will landscape the area to compensate for loss of vegetation and it is anticipated that the other projects will also include landscaping. As a result, the cumulative loss of vegetation is not expected to be significant.

The proposed project would result in the limited loss of potential habitat for CTS. Travis AFB will implement measures to reduce impacts and potentially mitigate lost habitat based on consultation with the USFWS. USFWS consultation regarding the other base projects will minimize and/or mitigate impacts to sensitive species. Therefore, while impacts may occur, the cumulative impacts should be reduced and mitigated to the extent feasible and cumulative impacts.

Land use. The project would permanently change the land use in the area from agricultural to public use. The limited loss of agricultural land is not significant. The other projects in Suisun City occur north of Peterson Road in developed areas (within Solano County's urban growth limit) and will be compatible with land use in the area. The total area of land impacted by these projects is small (65.43 acres) when compared to the size of Solano County. The Peterson Ranch Housing Development project is influenced by activities at the base given the proximity of residences to the base. The proposed project would not introduce factors that will affect land use compatibility in the area. The projects on Travis AFB would occur within the base boundaries and would not affect land use. As a result, the cumulative impact to land use would not be significant.

Transportation Systems. The proposed project would benefit transportation in the project area in the future. The other planned projects are not expected to have a permanent impact on transportation. Additional traffic on Peterson Road could

impact business to the Hardware Store and Boat & RV Storage, located on or near Peterson Road, due to increased congestion when accessing the businesses. However, as discussed above, Peterson Road is capable of accommodating a significant increase in traffic (Harms 2005). Other transportation projects planned in the area (refer to Section 3.11) would also improve the local transportation system. As a result, the cumulative impact would be positive.

Soils. The proposed project and planned projects in Suisun City would impact soils by converting area to impervious surface. Travis AFB will salvage valuable topsoil and restore it to areas of temporary disturbance to promote revegetation and the area that will be paved is limited and local. The proposed project will be designed to handle increased storm water run-off associated with the impervious area and drainage (i.e., to prevent flooding). It is anticipated that the other projects would also be designed to prevent impacts from storm water run-off and flooding. The projects on Travis AFB would primarily occur in disturbed and paved areas ad not impact soils. Therefore, the project would not contribute to a cumulative impact.

4.12 Unavoidable Adverse Impacts

Unavoidable adverse impacts associated with the implementation of the proposed action include the temporary disturbance to soils due to construction, temporary increase in fugitive dust and air emissions during construction, potential short-term traffic flow disturbance, and the permanent loss of minor wetland features on the acquired parcel. The majority of these effects are short-term in nature and are considered minor, since they would be confined to the immediate area. Environmental controls that will be implemented as part of the proposed action would minimize these potential impacts (see Section 4.4 for suggestions on controlling fugitive dust). In addition, with respect to the temporary traffic congestion at the South Gate, it currently has the lowest gate counts of any gate at Travis AFB, and is not used for personal vehicles.

The potential, permanent loss of wetland features due to the proposed action may result from the construction improvements at the South Gate. This would be considered an unavoidable adverse impact, but could be mitigated through wetland restoration, creation or enhancement to offset these potential negative impacts.

4.13 Relationship between Short-Term Uses and Enhancement of Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from implementation of the proposed action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with the land acquisition and construction improvements to the South Gate entrance. The proposed action represents an enhancement of the long-term functionality of Travis AFB, allowing for improved access, security, and inspection safety.

4.14 Irreversible and Irretrievable Commitment of Resources

An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the proposed action.

Short-term irreversible commitments of resources would occur when implementing the proposed action. These include planning and engineering costs, building materials and supplies and their cost, use of energy resources during construction, labor, generation of fugitive dust emissions, and creation of temporary construction noise. Long-term irreversible commitment of resources would include the potential impact to wetlands located on the parcel where construction activities would take place. The impact would be irreversible, but would be mitigated through wetland restoration, creation or enhancement. Irretrievable commitments of resources are those resources that would be lost for the life of the system. These resources are limited to the minor loss of land for paving and additional base structures under the proposed action.

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A Air Quality Tables

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A.2 Construction Emissions: Fugitive Emissions From Construction Activities

Input Parameters / Assumptions			
Acres affected:	3.0	acres/yr	
Grading days/yr:	21	days/yr	
Exposed days/yr:	21	days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil percent silt, s:	15	%	
Soil percent moisture, M:	2	%	
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	5	ft	
Qty construction vehicles:	3	vehicles	
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)

Reference: *CEQA Air Quality Handbook*, SCAQMD, April 1993.

Equation Used To Calculate Operation Parameters

Operation Parameter	Emission Factor	Units	Equation
Grading duration per acre	56	hr/acre	Grading days * hours per day / acres affected
Bulldozer mileage per acre	1.7	VMT/acre	Miles traveled by bulldozer, based on dozer path width
Construction VMT per day	15	VMT/day	Number of vehicle * VMT per vehicle per day
Construction VMT per acre	105	VMT/acre	Construction VMT * days of construction / acres affected (Travel on unpaved surfaces within site)

Equations Used To Calculate Mass/Unit Emission Factors (Corrected for PM_{10})

Operation	Empirical Equation	Units	AP-42 Section (4th Edition)
Bulldozing	0.75(s^1.5)/(M^1.4)	lbs/hr	8.24, Overburden
Grading	(0.60)(0.051)S^2.0	lbs/VMT	8.24, Overburden
Vehicle Traffic	(3.72/(M^4.3))*.6	lbs/VMT	8.24, Overburden

Reference: *Compilation of Air Pollutant Emission Factors*, USEPA AP-42: Section 8.24, Western Surface Coal Mining (4th Edition)

Emission Factors For Fugitive Emissions From Construction Activities[1]

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/acre)
Bulldozing	16.51 lbs/hr	56 hr/acre	924.6 lbs/acre
Grading	0.77 lbs/VMT	1.7 VMT/acre	1.3 lbs/acre
Vehicle Traffic	0.11 lbs/VMT	105.00 VMT/acre	11.6 lbs/acre

1 Emission Factor (lbs/acre) = Emission Factor (lbs per hour or VMT) * Operation Parameter (hours of VMT per acre)

Calculation of Annual Fugitive Emissions from Construction Activities

Source	Emission Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing[1]	924.6 lbs/acre	3.00	NA	2,774	1.39
Grading[1]	1.3 lbs/acre	3.00	NA	4	0.00
Vehicle Traffic[1]	11.6 lbs/acre	3.00	NA	35	0.02
Erosion of Graded Surface[2]	26.4 lbs/acre/day[3]	3.00	21	1,663	0.83
TOTAL				4,476	2.24

1 Total annual emissions (TPY) = Emission Factor (lbs/acre) * affected acres * 2000 lbs per ton

2 Total annual emissions (TPY) from erosion = Emission Factor (lbs/acre) * days of construction * 2000 lbs per ton

3. Reference: CEQA Air Quality Handbook, SCAQMD, April 1993.

ATTACHMENT A

Travis Air Force Base
South Gate Entrance Improvements

CALCULATION OF EMISSIONS

A.1 Construction Emissions: Vehicle Engine Exhaust From Grading and Material Hauling Activities

Input Parameters/Assumptions:	
Total Building Area:	1,200 ft^2
Total Paved Area:	75,000 ft^2
Total Disturbed Area:	3.00 acres
Construction Duration:	1.00 years
Annual Construction Activity:	250 days/yr
Total Demolition:	0 ft^2

source: Travis AFB Traffic Study South Gate Design Concept Cost Estimate and Drawings

Emission Factors For Vehicle Engine Exhaust From Construction Activities

Activity	SMAQMD Emission Factor									
	ROG[1]		NO_x		SO_2[2]		CO[2]		PM_{10}	
Grading Equipment[3]	2.91E-01	lbs/acre/day	2.75E+00	lbs/acre/day	0.18	lbs/acre/day	0.60	lbs/acre/day	2.32E-01	lbs/acre/day
Material Hauling[4]	4.20E-01	lbs/acre/day	6.07E+00	lbs/acre/day	0.40	lbs/acre/day	1.31	lbs/acre/day	4.30E-01	lbs/acre/day

Reference: *Air Quality Thresholds of Significance*, Sacramento Metropolitan Air Quality Management District (SMAQMD), 1994 and *Compilation of Air Pollutant Emission Factors* (USEPA AP-42).

1 ROG = VOC.

2 Factors for grading equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors.

3 Grading Activities assumes the use of one tracked loader, one wheeled loader, and one motor grader for each 10 acres of disturbed area, used 8 hours per day.

4 Material Hauling Activities assumes the use of one loader and one haul truck for each 10 acres of disturbed area, used 8 hours per day.

Total Daily Vehicle Engine Exhaust Emissions From Construction Actitivies[1]

	ROG	NO_x	SO_2	CO	PM_{10}
Grading Equipment	0.9	8.3	0.5	1.8	0.7
Material Hauling	1.3	18.2	1.2	3.9	1.3
Total Emissions (lbs/day):	**2.1**	**26.5**	**1.8**	**5.7**	**2.0**

1 Total Emissions (lbs/day) = Emission Factor * Affected Acres

Total Vehicle Engine Exhaust Emissions from Construction Activities[1]

	ROG	NO_x	SO_2	CO	PM_{10}
Grading Equipment	0.11	1.03	0.07	0.22	0.09
Material Hauling	0.16	2.28	0.15	0.49	0.16
Fugitive Emissions (from page 2)					2.24
Total Emissions(tons/yr)	**0.27**	**3.31**	**0.22**	**0.72**	**2.49**

1 Total emissions (TPY) = Total emissions (lbs/day) * days of construction / 2000 lbs per ton

B Wetland Delineation Report

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Delineation of Waters of the United States in an 12.4-acre Parcel Proposed for Acquisition by Travis Air Force Base

Solano County, California

November 2005

DEPARTMENT OF THE AIR FORCE
TRAVIS AIR FORCE BASE
60 Civil Engineer Squadron
411 Airmen Drive
Travis AFB, California 94535

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List of Abbreviations and Acronyms

AFB	Air Force Base
AoA	Antioch-San Ysidro
CWA	Clean Water Act
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
FAC	Facultative
FACW	Facultative Wetland
NWI	National Wetland Inventory
OBL	obligate
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resource Control Board
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United State Geological Survey

Executive Summary

This report presents results of a delineation of wetlands and waters of the United States on an approximately 12.4-acre parcel (APN-174-190-06) being considered for acquisition by Travis Air Force Base (AFB) in Solano County, Suisun City, California (see Figure 1-1 for the regional location of Travis AFB). The real property is located immediately south of Peterson Road and adjacent to the southwestern corner boundary of Travis AFB. The parcel location is depicted in Figure 1-2.

Ecology and Environment, Inc. preformed a delineation of wetlands and waters of the United States in the proposed 12.4-acre parcel on September 19, 2005, for Jacobs Engineering. The delineation was performed using the routine on-site determination method outlined in the United States Army Corps of Engineers (USACE) *Wetland Delineation Manual* (Environmental Laboratory 1987).

The survey identified two wetlands wholly in the parcel (WW01-001 and WW01-003) and one wetland partially in the parcel (WW01-002) that contain all three wetland parameters (hydrology, vegetation, and soils). The total acreage of delineated wetlands in the parcel is 0.0304 acre. The survey also identified one agricultural drainage ditch (SS01-001). The feature was dry at the time of the survey, but in the event of flow, water would eventually drain into Union Creek. The total acreage of the agricultural drainage ditch is 1.69 acres. The total acreage of waters of the United States, including the wetlands and agricultural drainage ditch, is 1.72 acres.

These features are discussed in detail in the following report. The locations of the delineated features are depicted on the aerial photograph provided in Figure 3-1. Field survey data sheets and photographs of the delineated features are provided in Appendix A and Appendix B, respectively.

1 Parcel Description

The real property considered for acquisition consists of an approximately 12.4-acre parcel of land (APN-174-190-06) located at the southwestern corner of Travis Air Force Base (AFB) (see Figure 1-1), immediately south of Peterson Road and adjacent to the base fence line (Mount Diablo Base and Meridian Township 5 North, Range 1 West, Section 34). Peterson Road leads to the South Gate entrance of Travis AFB. Figure 1-2 depicts the location of the parcel.

Travis AFB proposes to acquire this parcel to construct the proposed South Gate Improvement Project. At this time, improvement activities are only planned in the western, approximately 12.4-acre area of the parcel; however, additional activities may be planned in other areas of the parcel in the future. See Figure 1-3 for a visual depiction of the proposed land acquisition and the potential area of impact for the South Gate Improvement Project. Improvements at the South Gate entrance would allow Travis AFB to meet future traffic demands, improve gate security, ensure personnel safety, provide a commercial truck inspection facility, and minimize traffic congestion, while ensuring entry control requirements. Improvements would include constructing a new truck inspection facility, bypass lane for oversized vehicles, turnaround area for large trucks, and a covered two-bay inspection site for contractor processing. A new gatehouse and shelter would also be constructed to provide a place for drivers to use while their vehicles are processed through the inspection facility or as they wait for a base escort. Other elements of the inspection facility would include additional parking for staff working at the South Gate entrance, a barrier to provide control of inbound and outbound vehicles, and appropriate directional signs to guide drivers to appropriate locations.

E & E conducted the delineation of wetlands and waters of the United States in the 12.4-acre parcel to identify the locations and extent of areas regulated by the USACE under Section 404 of the Clean Water Act (CWA) and the Regional Water Quality Control Board (RWQCB) under Section 401. This report was prepared to facilitate additional environmental analysis and permitting for Travis AFB's planned South Gate Improvement Project.

Source: ESRI, 2005

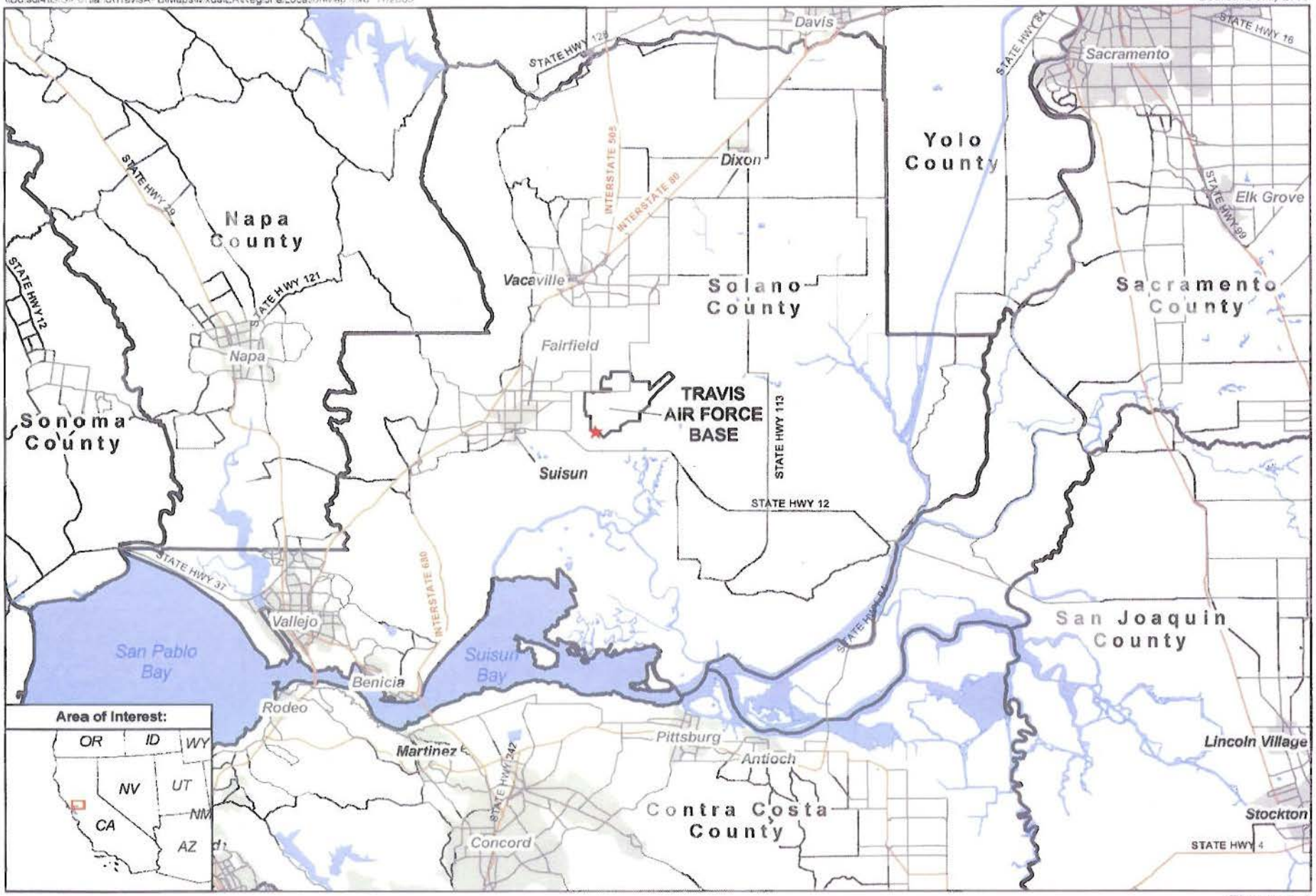

Figure 1-1
Regional Location Map
South Gate Improvement Project
Travis Air Force Base
Solano County, California

South Gate Improvement Project Area of Potential Impact (12.4 acres)

Proposed Land Acquisition (12.4 acres)

Figure 1-3
Aerial Photograph
South Gate Improvement Project
Travis Air Force Base
Solano County, California

02:001856_JA02_01-B1761\Fig8-2.CDR-11/11/05-GRA

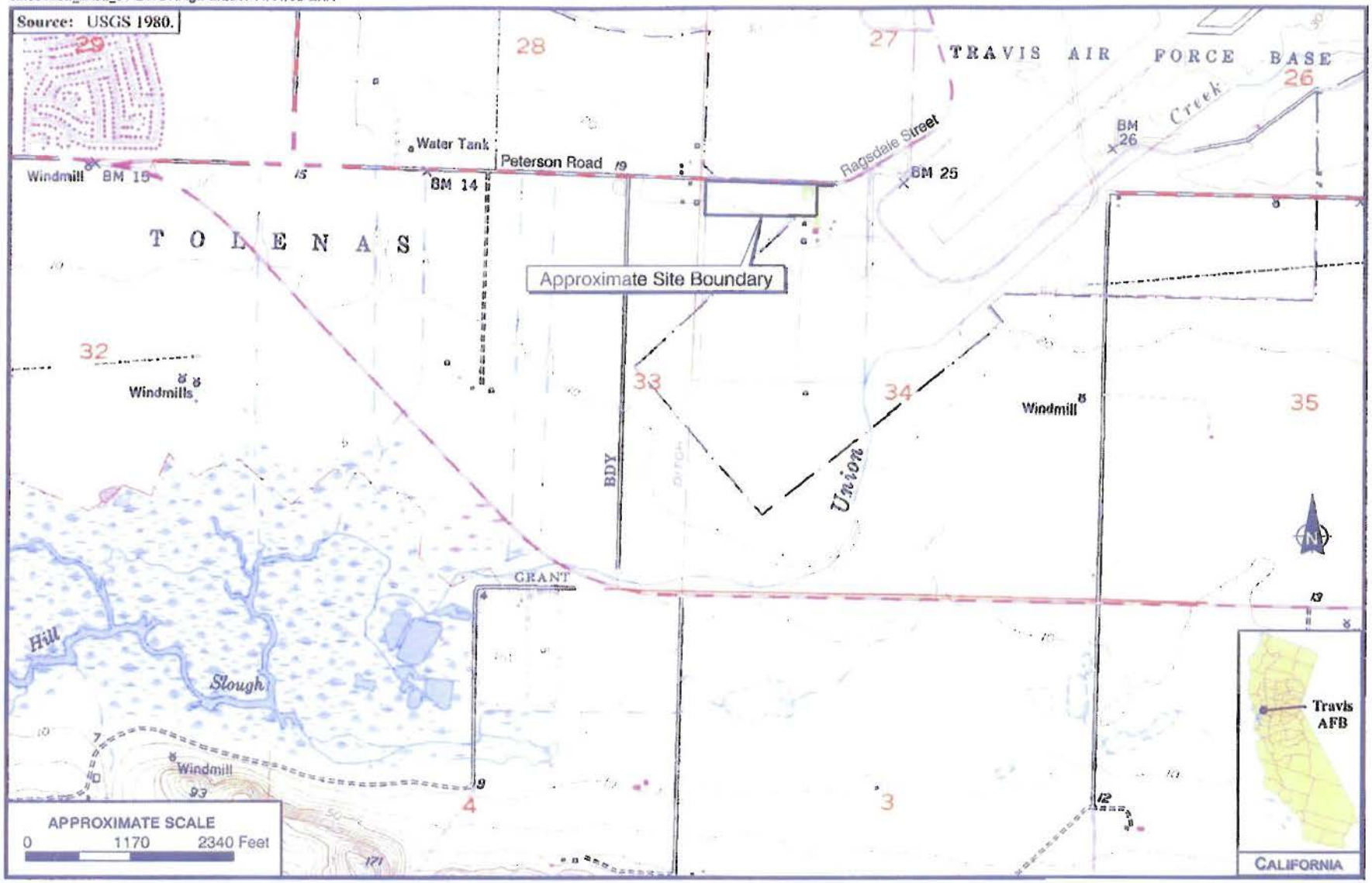

Figure 1-2
Site Vicinity Map
South Gate Improvement Project
Travis Air Force Base
Solano County, California

2 Regulatory Environment

2.1 Federal

The United States Congress enacted the CWA in 1972 to protect water quality by regulating impacts to and discharges into "Waters of the United States." Regarding wetlands and waters of the United States, Section 404 of the CWA delegates regulatory authority to the USACE over actions that involve placing fill and/or dredging in wetlands adjacent to navigable "Waters of the United States." Section 10 of the CWA requires approval from the USACE prior to obstruction or alteration of navigable waters. In 1976, the USACE and EPA adopted the following regulatory definition of wetlands:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (33 Code of Federal Regulations 328.3)

The USACE *Wetland Delineation Manual* (Environmental Laboratory 1987) is used to guide delineation of wetlands and other waters of the United States.

2.2 State

Section 401 of the CWA, requires each State Water Resources Quality Control Board (SWRQCB) to review actions requiring federal permits to ensure that such actions do not violate state water quality standards. This task is delegated by the SWRCB to the local RWQCB, except for activities that occur in areas regulated by more than one RWQCB. The RWQCB will issue a Section 401 certification for actions found to comply with state standards. Conditions placed on the issuance of a Section 401 certification become part of the Section 404 permit issued by the USACE.

3 General Site Conditions

3.1 Hydrogeographic Setting

Surface Water

The nearest surface water feature is Union Creek, located approximately 0.5-mile southeast of the parcel area. Union Creek flows into Hill Slough, which continues to flow southwest and eventual joins Suisun Slough. Suisun Slough continues southwest and either flows into Montezuma Slough via Hunter Cut or continues to flow along the west side of Joice Island into Grizzly Bay.

Based upon review of aerial photographs, one unnamed drainage was identified in the parcel. A survey of the parcel conducted on September 19, 2005, confirmed that the drainage is an agricultural ditch, as discussed in detail in Section 5.

Groundwater

Groundwater resources in the vicinity of the property have been documented as shallow (USAF 2003). Groundwater flows south to the Suisun Marsh, on to the Suisun Bay, and eventually to the San Francisco Bay.

Wetlands

National Wetland Inventory (NWI) maps were reviewed to identify mapped wetlands in the parcel. No mapped wetlands were identified. A survey of the parcel conducted on September 19, 2005, revealed three wetlands (see Figure 3-1) that are discussed in detail in Section 5.

3.2 Vegetation

The vegetation community within the parcel consists of grasslands and pasture-land with a variety of native and non native plant species. Field surveys completed in the summers of 2004 and 2005 identified several grass and noxious weed species throughout the parcel. Common species observed included wild oats (*Avena* sp.), rabbit-foot grass (*Polypogon* sp.), tarweed *(Hemizonia* sp.), milkweed (*Asclepias* sp.), barley (*Hordeum* sp.), ryegrass (*Lolium* sp.), two species of starthistle (*Centaurea solstitialis* and *C. calcitrapa*), knotweed (*Polygonum* sp.), pepperweed (*Lepidium latifolium*), bermudagrass (*Cynodon dactylon*) curly dock (*Rumex crispus*), sheep sorrel (*Rumex acetosella*), and clover (*Trifolium glomeratum*).

3.3 Soils

The parcel is comprised of Antioch-San Ysidro (AoA) complex, as mapped by the United States Department of Agriculture (see Figure 3-2). The AoA complex is approximately 50% Antioch loam and 35% San Ysidro sandy loam, with the remaining percentage consisting of Solano loam and Pescadero clay loam, the later of which is listed as hydric. All of these soils have been described as having very slow runoff. With the exception of the wetland areas described in Section 5, soils across the property were consistent with the descriptions for the Antioch and San Ysidro soils.

The surface layer soils for the AoA complex (0 to 5 inches) can be characterized as a light brownish-gray (10 YR 6/2) loam with common, fine, distinct mottles (10 YR 5/6). Below the surface layer soil (5 to 14 inches), soil is brown (10 YR 5/3) with few, fine, distinct mottles (10 YR 5/6). Moist soils for both layers are described as strong-brown (10 YR 4/2 or 3/3). Soils for the Pescadero clay loam at the surface (0 to 4 inches) are light brownish-gray (10 YR 6/2) with common, fine, distinct mottles (10 YR 5/4). From 4 to 14 inches below ground surface the soil is gray (10 YR 5/1) with no mottles. The Solano loam at the surface (0 to 4 inches) is light brownish-gray (10 YR 6/2) with few, fine distinct mottles (10 YR 5/8). Below the surface soil layer (4 to 9 inches), the soil is light-gray (10 YR 7/2 with few, fine, distinct mottles (10 YR 5/6).

Figure 3-1
Delineated Wetlands and Waters of the United States
South Gate Improvement Project
Travis Air Force Base
Solano County, California

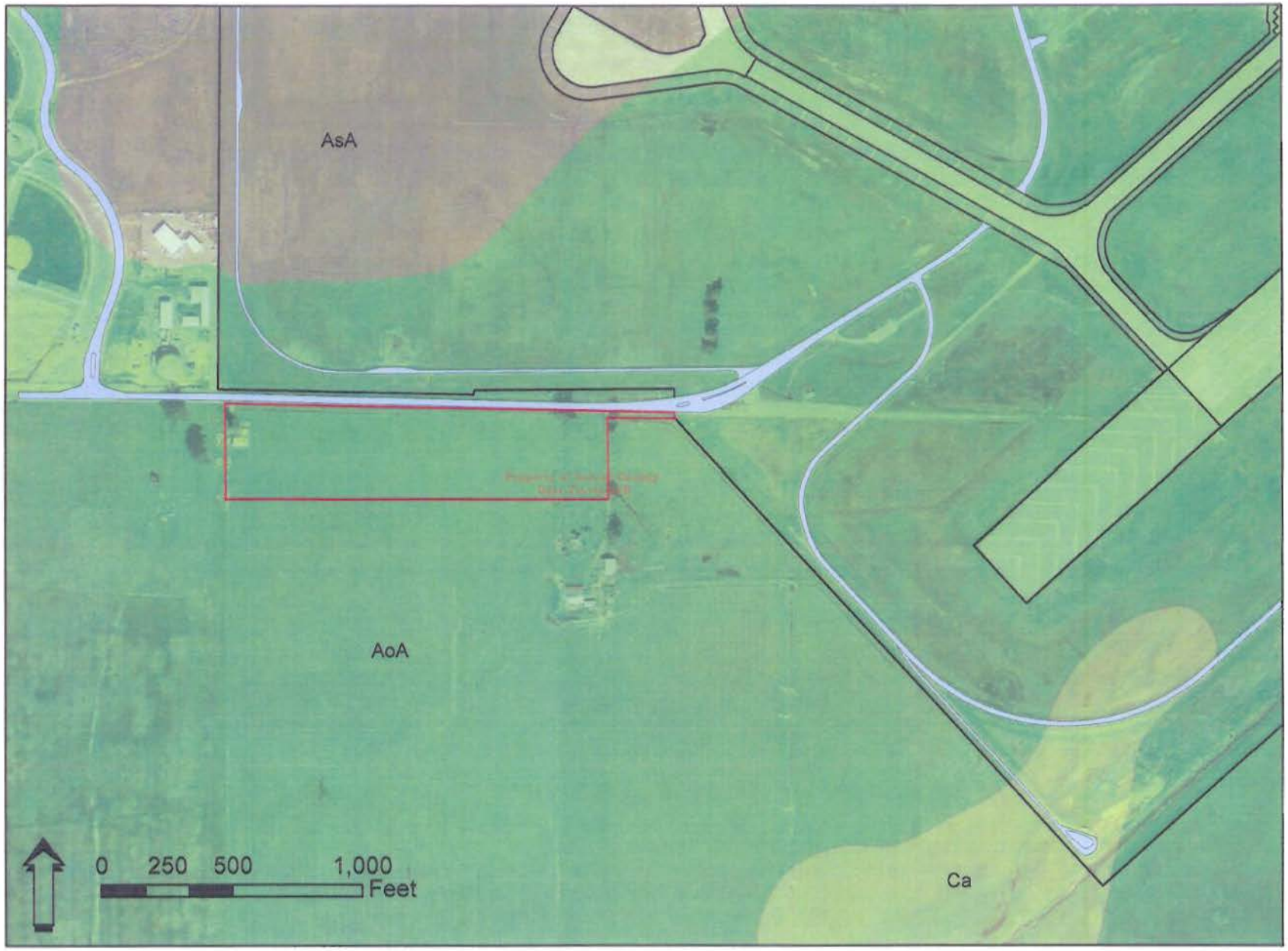

Figure 3-2
SSURGO Soils
South Gate Improvement Project
Travis Air Force Base
Solano County, California

4 Delineation Methodology

4.1 General Methods

Ecology and Environment, Inc. (E & E) reviewed the following sources for information relevant to this delineation:

- United States Geological Survey (USGS) 7.5-minute topographic maps;
- NWI maps;
- Soil survey data; and
- Standard biological references and field guides.

Following this initial review, E & E conducted an on-site survey for wetlands and waters of the United States using the routine on-site determination method outlined in the USACE *Wetland Delineation Manual* (Environmental Laboratory 1987). Soil, hydrology, and vegetation data were collected at five sites; however, only four of the sites ultimately occur within the parcel proposed for acquisition as discussed in Section 5. Consequently, the remaining feature, an agricultural drainage ditch identified outside of the parcel, is not discussed further in this report. The boundaries of the wetlands were determined based on changes in vegetation and site topography.

Delineated wetlands and waters of the United States were mapped, alphanumerically identified, and cross-referenced to the field survey data sheets for each sample location (see Figure 3-1 and field data sheets in Appendix A).

4.2 Wetland Methodology

The boundary of wetlands is determined by examining the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, all three of these parameters must be satisfied for an area to be considered a jurisdictional wetland under Section 404 of the CWA. Methods used to evaluate hydrophytic vegetation, hydric soils, and wetland hydrology are described below.

Hydrophytic Vegetation

Hydrophytic vegetation is defined as:

> "The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. The vegetation occurring in a wetland may consist of more than one plant community (wetland plant communities may contain plant species that are Obligate [OBL], Facultative Wetland [FACW], Facultative [FAC], Facultative Upland [FACU], Upland [UPL], No Indicator [NI], and/or Not Listed [NL])" (Environmental Laboratory, 1987).

Hydrophytic vegetation was identified by visual observation of dominant plant species (defined as plants that comprise 20% or more of the cover value observed at a site). An area was considered to have hydrophytic vegetation when more than 50% of the dominant species were Obligate (OBL), Facultative Wetland (FACW), of Facultative (FAC) (Environmental Laboratory 1987). At each sample location there was no overstory; therefore, vegetation was analyzed within an approximately 5-foot radius of the sample location.

When plants could not be identified to species due to seasonal constraints or impacts caused by land use, only the genus or plant community was listed. The indicator of each species was confirmed using *National List of Plant Species that Occur in Wetlands* (Reed 1988).

Hydric Soil

Hydric soil is defined as:

> "A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of its stratum." (Environmental Laboratory 1987)

Determination of hydric soil conditions was based on an assessment of soil characteristics at each sample location inspected. A soil depth of 12-inches or greater could not be obtained because the soil was extremely hard. A spade shovel was inadequate to obtain sufficient soil depth; therefore, a pick-axe was used at each sample location to assess soil matrix color, soil texture, and presence of mottling or gleying. A maximum 8-inch depth was obtained using a pick-axe, but a proper soil profile was impossible to collect because the soil would turn to a fine powder or break into several small pieces. Soils analyzed from the test pit were wetted before using the Munsell Soil Color Charts. The soil hue, value, and chroma were determined using Munsell Soil Color Charts. Professional judgment was used to determine whether the soil criteria were met at each sample location. The natures of the soils were assessed using the Soil Survey for Solano County (USDA 1977).

Wetland Hydrology

Wetland hydrology is defined as:

> "All hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively." (Environmental Laboratory 1987)

Wetland hydrology was determined to be present if the sample location had one or more of the following characteristics:

- Landscape position and surface topography (e.g., position of the site relative to an upslope water source, a location within a distinct wetland drainage pattern, or concave surface topography);
- Inundation or saturation for a long duration (either inferred based on field indicators or observed during field surveys); and
- Residual evidence of ponding or flooding (e.g., scour marks, sediment deposits, algal matting, or drift lines).

5 List of Preparers

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Kimberly Stern	Environmental Scientist	6	Affected Environment and Environmental Consequences
Noreen Roster	Environmental Specialist	14	Proposed Action and Alternatives; Water Resources
Laurie Kutina	Air Quality Specialist	12	Air Quality Resources
Travis AFB	Biologist	N/A	Biological Resources
Jenny Gnanendran	GIS Analyst	6	GIS Maps and Figures
Sandra Brown	Technical Editor	5	Editing

6 Conclusions

This delineation of wetlands and waters of the Unites States covers 18.6-acres. Travis AFB proposes to acquire 12.4 acres of that parcel in order to implement its proposed South Gate Improvement Project. This report is limited to providing the results of the field survey conducted by E & E on September 19, 2005, which identified a total of 0.0304 acre of wetlands and 1.69 acres of agricultural drainage ditch for a total of 1.72 acres of wetlands and waters of the United States. This report is intended for use by Travis AFB to consider the location of delineated features relative to planned activities associated with the South Gate Improvement Project in order to prepare further environmental studies and facilitate environmental permitting.

7 References

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Federal Interagency Committee for Wetland Delineation, 1989, Federal Manual for Identifying and Delineating *Jurisdictional Wetlands* (Cooperative Technical Publication), United States Army Corps of Engineers, United States Environmental Protection Agency, United States Fish and Wildlife Service, and United States Soil Conservation Service, Washington, D.C.

Reed, P.B. Jr., 1988, *National List of Plant Species that Occur in Wetlands: 1988 National Summary,* Biological Report 88(26.8), United States Fish and Wildlife Service, Fort Collins, Colorado.

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United States Fish and Wildlife Service, 2001, *National Wetlands Inventory (NWI)*, http://wetlands2.nwi.fws.gov/nwi_mapplet/summap.html.

Wetland Training Institute (WTI), 1995, *Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (WTI 95-3), Poolsville, Maryland.

A Waters of the United States Delineation Field Data Sheets

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South Gate Improvement Project	Date: 19 Sept 2005
Applicant/Owner: Travis Air Force Base	County: Solano
Investigator: Noreen Roster	State: CA
Wetland No.: WW01-001 (wetland) Milepost: N/A	Segment No.: N/A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Polypogon maritimus*	Herb (50%)	OBL	6.		
2. *Triglochin* sp.	Herb (30%)	OBL	7.		
3. *Rumex crispus*	Herb (5%)	FACW-	8.		
4. *Distichlis spicata*	Herb (5%)	FACW	9.		
5. Bareground	N/A (10%)		10.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 4/4 = 100% of dominate species are OBL, FACW or FAC.

Remarks: Vegetation requirement is met using the 50/20 criteria.

HYDROLOGY

Do Normal Circumstances exist on the site? Yes ☒ No ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☒

Is the area a potential Problem Area? Yes ☐ No ☒
(If yes see additional form for ATYPICAL SITUATIONS)

☐ Recorded Data (Describe in Remarks):
- ☐ Storm, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____(in.)

Depth of Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☒ Other (Explain in Remarks)

Remarks: Wetland hydrology is seasonal within the shallow pool.

SOILS **Wetland No.:** WW01-001(wetland) **Milepost: N/A** **Segment No.:** N/A

Map Unit Name

(Series and Phase): Antioch –San Ysidro Complex Drainage Class: UNK

(0 to 2% slopes) Confirmed Mapped Type? Yes ☐ No ☒

Taxonomy (Subgroup): Typic Natrixeralfs

Family Fine, montmorillonitic, thermic

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-8*	A	10YR 4/2	10YR 5/6	Many/Fine/Distinct	Fine sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histisic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☒ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: *An adequate soil depth could not be obtained because the soil was hard-pan clay. The 8-inch depth was obtained using a pick-axe but a proper soil profile was impossible to collect because the soil would turn to a fine powder or break into several small pieces.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	
Hydric Soils Present?	Yes ☒ No ☐	Is this Sampling Point Within a Wetland? Yes ☒ No ☐

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South Gate Improvement Project	Date: 19 Sept 2005
Applicant/Owner: Travis Air Force Base	County: Solano
Investigator: Noreen Roster	State: CA
Wetland No.: WW01-001 (upland) Milepost: N/A	Segment No.: N/A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Hordeum murinum*	Herb (40%)	Upland	6.		
2. *Rumex acetosella*	Herb (10%)	FAC-	7.		
3. *unknown species*	Herb (10%)	?	8.		
4.			9.		
5.			10.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/3 = 66% of the dominant species are not OBL, FACW or FAC.

Remarks: Vegetation requirement was not met using the 50/20 criteria.

HYDROLOGY

Do Normal Circumstances exist on the site? Yes ☒ No ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☒

Is the area a potential Problem Area? Yes ☐ No ☒
(If yes see additional form for ATYPICAL SITUATIONS)

☐ Recorded Data (Describe in Remarks):
- ☐ Storm, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Wetland Hydrology Indicators:
Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: _____(in.)

Depth of Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: No hydrology indicators present.

SOILS **Wetland No.:** WW01-001 (upland) **Milepost:** N/A **Segment No.:** N/A

Map Unit Name

(Series and Phase): Antioch –San Ysidro Complex Drainage Class: UNK

(0 to 2% slopes) Confirmed Mapped Type? Yes ☐ No ☒

Taxonomy (Subgroup): Typic Natrixeralfs

Family Fine, montmorillonitic, thermic

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-8*	A	10YR 4/2	10YR 5/6	Many/Fine/Distinct	Fine sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histisic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☒ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: *An adequate soil depth could not be obtained because the soil was hard-pan clay. The 8-inch depth was obtained using a pick-axe but a proper soil profile was impossible to collect because the soil would turn to a fine powder or break into several small pieces.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is this Sampling Point Within a Wetland? Yes ☐ No ☒
Wetland Hydrology Present?	Yes ☐ No ☒	
Hydric Soils Present?	Yes ☒ No ☐	

Remarks: Vegetation and site topography was the factor in determining the wetland boundary.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South Gate Improvement Project	Date: 19 Sept 2005
Applicant/Owner: Travis Air Force Base	County: Solano
Investigator: Noreen Roster	State: CA
Wetland No.: WW01-002 (wetland) Milepost: N/A	Segment No.: N/A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Veronica anagallis-aquatica*	Herb (90%)	OBL	6.		
2. *Hordeum marinum ssp. gussoneanum*	Herb (10%)	Upland	7.		
3.			8.		
4.			9.		
5.			10.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): ½ = 50% of dominant vegetation are OBL, FACW or FAC.

Remarks: Vegetation requirement was met using the 50/20 criteria.

HYDROLOGY

Do Normal Circumstances exist on the site? Yes ☒ No ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☒

Is the area a potential Problem Area? Yes ☐ No ☒
(If yes see additional form for ATYPICAL SITUATIONS)

☐ Recorded Data (Describe in Remarks):
- ☐ Storm, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____(in.)

Depth of Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☒ Other (Explain in Remarks)

Remarks: Wetland hydrology is seasonal within the shallow pool.

SOILS **Wetland No.:** WW01-002 (wetland) **Milepost:** N/A **Segment No.:** N/A

Map Unit Name

(Series and Phase): Antioch –San Ysidro Complex Drainage Class: UNK

(0 to 2% slopes) Confirmed Mapped Type? Yes ☐ No ☒

Taxonomy (Subgroup): Typic Natrixeralfs

Family Fine, montmorillonitic, thermic

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-6*	A	10YR 3/2	10YR 5/6	Few/Fine/Faint	Fine sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histisic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☒ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: *An adequate soil depth could not be obtained because the soil was extremely hard. The 6-inch depth was obtained using a pick-axe but a proper soil profile was impossible to collect because the soil would turn to a fine powder or break into several small pieces making it difficult to determine where mottles began.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is this Sampling Point Within a Wetland? Yes ☒ No ☐
Wetland Hydrology Present?	Yes ☒ No ☐	
Hydric Soils Present?	Yes ☒ No ☐	

Remarks: Vegetation and site topography was the factor in determining the wetland boundary.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South Gate Improvement Project	Date: 19 Sept 2005
Applicant/Owner: Travis Air Force Base	County: Solano
Investigator: Noreen Roster	State: CA
Wetland No.: WW01-002 (upland) Milepost: N/A	Segment No.: N/A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Veronica anagallis-aquatica*	Herb (10%)	OBL	6.		
2. *Hordeum marinum ssp. gussoneanum*	Herb (80%)	Upland	7.		
3. *Rumex acetosella*	Herb (10%)	FAC-	8.		
4.			9.		
5.			10.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 1/3 = 33% of dominate species were OBL, FACW or FAC.

Remarks: Vegetation requirement was not met using the 50/20 criteria.

HYDROLOGY

Do Normal Circumstances exist on the site? Yes ☒ No ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☒

Is the area a potential Problem Area? Yes ☐ No ☒
(If yes see additional form for ATYPICAL SITUATIONS)

☐ Recorded Data (Describe in Remarks):
- ☐ Storm, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Field Observations:

Depth of Surface Water: _____(in.)

Depth of Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: No evidence of hydrologic indicators.

SOILS **Wetland No.:** WW01-002 (upland) **Milepost:** N/A **Segment No.:** N/A

Map Unit Name

(Series and Phase): Antioch –San Ysidro Complex Drainage Class: UNK

(0 to 2% slopes) Confirmed Mapped Type? Yes ☐ No ☒

Taxonomy (Subgroup): Typic Natrixeralfs

Family Fine, montmorillonitic, thermic

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-6*	A	10YR 3/2	10YR 5/6	Few/Fine/Faint	Fine sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histisic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☒ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: *An adequate soil depth could not be obtained because the soil was extremely hard. The 6-inch depth was obtained using a pick-axe but a proper soil profile was impossible to collect because the soil would turn to a fine powder or break into several small pieces making it difficult to determine where mottles began.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is this Sampling Point Within a Wetland? Yes ☐ No ☒
Wetland Hydrology Present?	Yes ☐ No ☒	
Hydric Soils Present?	Yes ☒ No ☐	

Remarks: Vegetation and site topography was the factor in determining the wetland boundary.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: South Gate Improvement Project	Date: 19 Sept 2005
Applicant/Owner: Travis Air Force Base	County: Solano
Investigator: Noreen Roster	State: CA
Wetland No.: WW01-003 Milepost: N/A	Segment No.: N/A

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Lepidium latifolium*	Herb (90%)	FACW	6.		
2. *Cynodon dactylon*	Herb (10%)	FAC	7.		
3.			8.		
4.			9.		
5.			10.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 2/2 = 100% of dominate species are OBL, FACW or FAC

Remarks: Vegetation requirement was met using the 50/20 criteria.

HYDROLOGY

Do Normal Circumstances exist on the site? Yes ☒ No ☐

Is the site significantly disturbed (Atypical Situation)? Yes ☐ No ☒

Is the area a potential Problem Area? Yes ☐ No ☒
(If yes see additional form for ATYPICAL SITUATIONS)

☐ Recorded Data (Describe in Remarks):
- ☐ Storm, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☒ No Recorded Data Available

Wetland Hydrology Indicators:
Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Field Observations:

Depth of Surface Water: _____(in.)

Depth of Free Water in Pit: _____(in.)

Depth to Saturated Soil: _____(in.)

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12 Inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks: Soil was moist at the time of the delineation.

SOILS **Wetland No.:** WW01-003 **Milepost:** N/A **Segment No.:** N/A

Map Unit Name

(Series and Phase): Antioch –San Ysidro Complex Drainage Class: UNK

(0 to 2% slopes) Confirmed Mapped Type? Yes ☐ No ☒

Taxonomy (Subgroup): Typic Natrixeralfs

Family Fine, montmorillonitic, thermic

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance / Size / Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	10YR 5/6	Few/Fine/Faint	Fine sandy loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histisic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☒ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks: Soil was moist at the time the delineation was performed.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes ☒ No ☐

Wetland Hydrology Present? Yes ☒ No ☐

Hydric Soils Present? Yes ☒ No ☐

Is this Sampling Point Within a Wetland? Yes ☒ No ☐

Remarks: Vegetation and site topography was the factor in determining the wetland boundary.

STREAM DATA SHEET

County: Solano

Stream Name: Agricultural drainage ditch (ID. #: SS01-001)

Date: 19 Sept 05

Stationing Number: N/A

Observers: Noreen Roster
Other _____

Photograph number: _____

Distance surveyed from road centerline: N/A

Stream Flow

Perceptible Flow [ ] yes [X] no

Stream Flow Direction N/A

Stream Width (ft) (water's edge to water's edge) 0 feet

Stream Width (ft) (bank to bank) Average width 25 feet

Bottom Characteristics

Probed Stream Depth (if possible)

[X] 0 - 6"	[ ] Bedrock
[ ] 7 - 12"	[ ] Gravel
[ ] 13 - 24"	[ ] Sand
[ ] 25 - 36"	[X] Silt/Clay
[ ] 37" +	[ ] Organic

Substrate Type

Stream Type

[ ] Alluvial
[ ] Wash
[ ] Spring-run
[X] Canal

Bank Height and Slope

Left Bank*		Right Bank*
0-3' High		
[ ]	0 - 20% (0-11°)	[ ]
[ ]	21 - 50% (12-27°)	[ ]
[ ]	51 - 100% + (38-45°)	[ ]
[ ]	100%+(46°+)	[ ]
3-6' High		
[ ]	0 - 20% (0-11°)	[ ]
[ ]	21 - 50% (12-27°)	[ ]
[X]	51 - 100% (38-45°)	[X]
[ ]	100% (46°+)	[ ]
6' + High		
[ ]	0 - 20% (0-11°)	[ ]
[ ]	21 - 50% (12-27°)	[ ]
[ ]	51 - 100% (38-45°)	[ ]
[ ]	100% (46°+)	[ ]

Evidence of Erosion? None

*Direction when facing downstream

Aquatic Habitat

[ ] Sand bar
[ ] Sand/gravel beach/bar
[ ] Mud bar
[ ] Overhanging trees/shrubs
[ ] Gravel riffles
[ ] Deep pool/hole
[ ] Aquatic vegetation
[X] Associated wetland vegetation

Water Quality

Clarity:
[ ] Clear
[ ] Slightly turbid
[ ] Turbid
[ ] Very turbid

Color:
_____ (if other than clear)

Riparian Vegetation

Trees: _____

Shrubs: _____

Herbaceous: *Hordeum marinum ssp. gussoneanum, Polypogon maritimus, Polypogon monspeliensis, Polygonum arenastrum,* and *Lolium multiflorum.*

Aquatic Organisms Sighted

[ ] Waterfowl
[ ] Fish
[ ] Snakes
[ ] Turtles
[ ] Frogs
[ ] Invertebrates
[ ] Other

T/E Species

Suitable Habitat:
[ ] Yes [X] No

Description of habitat and species.

No observations of aquatic organisms or T/E species. Water feature was not flowing.

Comments: An agricultural drainage ditch traverses the project site running east west along the northern portion of the site and then proceeds south on the east west sections of the project.

B Photographs of Delineated Waters of the United States

TRAVIS AIR FORCE BASE

Solano County, California

SS01-001 North Boundary of Property

View of agricultural drainage ditch along the north boundary of the parcel looking west down Peterson Road.

SS01-001 West Boundary of Property

View of agricultural drainage ditch along the west boundary of the property looking south.

Solano County, California

WW01-001 Wetland

View of small wetland/vernal pool adjacent to SS01-001 in the northeastern portion of the parcel. The buildings in the picture are associated with the existing South Gate entrance.

WW01-002 Wetland

View of wetland/vernal pool located along the southern boundary of the parcel, which is located to the right of the tree. The majority of WW01-002 is located south and outside of the parcel boundary.

TRAVIS AIR FORCE BASE

Solano County, California

WW01-003 Wetland

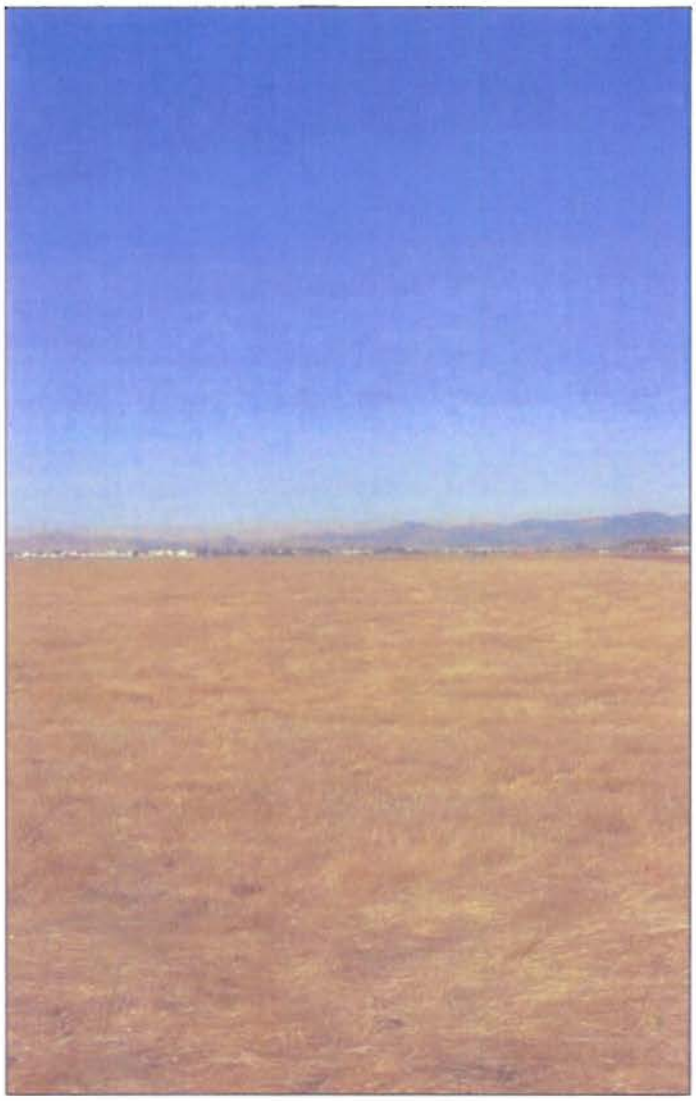
View of the wetland located south of the house near the western boundary of the parcel, which consists of pepperweed (Lepidium latifolium) and bermudagrass (Cynodon dactylon).

SS01-001 Agricultural Drainage Ditch

View looking south along SS01-001 (drainage ditch on the right side of the photograph) adjacent to the eastern boundary of the parcel. The drainage ditch on the left side of the photograph is just outside of the parcel boundary and in Travis AFB.

C Cultural Resources Survey Report

Cultural Resources Survey Results for the Installation of a New Entrance Gate at the South Corner of Travis Air Force Base, Suisun City, Solano County, California



Prepared For:

Ecology and Environment, Inc
350 Sansome St. #300
San Francisco, California 94104

Prepared By:

Garcia and Associates
146 Hekili St., Suite 101
Kailua, Hawai'i 96734

GANDA

November 2005

Cultural Resources Survey Results for the Installation of a New Entrance Gate at the South Corner of Travis Air Force Base, Suisun City, Solano County, California

Prepared For:

Ecology and Environment, Inc.
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Prepared By:

Cassidy R. DeBaker, BA

Garcia and Associates
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Kailua, Hawai'i 96734

GANDA

November 2005

MANAGEMENT SUMMARY

At the request of Ecology & Environment, Inc., Garcia and Associates has completed a cultural resource survey of two separate parcels for the installation of a new entrance gate at the south corner of Travis Air Force Base, Solano County, California. The two separate parcels include a 13.63 acre parcel and a 4.97 acre parcel, totaling approximately 18.6 acres. All work was performed in accordance with specifications outlined in the revised scope-of-work and the installation's Integrated Cultural Resources Management Plan (ICRMP 2003).

The cultural resource survey in the 13.63 acre parcel was conducted using parallel transects at varying intervals (15–25 m) to ensure adequate coverage. A cursory inspection was performed within the 4.97 acre parcel.

The goal of the cultural resource survey was to determine the presence or absence of historic properties within the project area and to assess the significance and integrity of any identified properties.
No historic properties were identified in the project area. This project will therefore have no adverse effect on historic properties.

CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION

At the request of Ecology and Environment, Inc., Garcia and Associates conducted a cultural resource survey of two separate parcels for the installation of a new entrance gate at the south corner of Travis Air Force Base (Travis AFB), Solano County, California. The two separate parcels include, a 13.63 acre parcel and a 4.97 acre parcel, totaling approximately 18.6 acres. The project area is currently on private property, and is proposed to be purchased by Travis AFB.

The cultural resource survey was performed in accordance with the revised scope-of-work, under Ecology & Environment, Inc.'s contract with the Air Force Center for Environmental Excellence. Garcia and Associates conducted the survey on 19 September 2005. John A. Peterson, PhD, was the Principal Investigator and Cassidy R. DeBaker, BA, was the field director for the project.

Research objectives for the project were to determine the presence or absence of significant historic properties, to assess the nature and chronology of historic sites and/or features, and to assess the significance of any sites identified. These objectives were pursued in accordance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, and the Secretary of the Interior's Guidelines for Historic Preservation.

1.1 Survey Area Description

The project area is located within the City of Suisun, California on 18.6 acres of agricultural land adjacent to Travis AFB (Figures 1 and 2). Travis AFB is approximately 45 miles northeast of San Francisco and 40 miles southwest of Sacramento in Solano County. The project area lies directly south of Travis AFB, extending parallel to the eastern stretch of Peterson Road (see Figure 2). Peterson Road is currently the main access road to the existing south gate entrance to Travis AFB. This location has been significantly modified over the last century through the expansion of agricultural and ranching developments as well as the construction of major roadways.

A pedestrian survey was conducted along transects spaced at 15–25 m intervals over 100% of the 13.63 acre parcel. A cursory inspection was performed within portions of the triangular 4.97 acre adjacent parcel (Figure 2). Although the 4.97 acre parcel was not included in the project scope-of-work, a minimal walk-through was conducted.

2.0 BACKGROUND

The following sections provide detailed information on the environmental, cultural, historical, and archaeological context of the survey area. The first section reviews the environmental context within the project area. Following this is an overview of prehistoric and historic period land-use. Finally, a summary of previously recorded cultural resources at Travis AFB is presented.

2.1 Environmental

The project area is currently utilized for livestock grazing. The environmental setting in and around the project area consists of riparian wetlands, wet meadows, vernal pools, and grasslands. The predominate habitat in the project area is grassland (Figures 3 and 4); however, a few small areas of scrub/shrub wetlands have been identified. Several types of grassland species are abundant in the project area including, soft chess, Italian ryegrass, Zorro fescue, wild oat, ripgut brome and Harding grass (Environmental Assessment Anti-Terrorism/Force Protection 2003). Prior to agricultural and ranching

developments, this area was part of a larger tidal wetland habitat. Union creek, just south of the project area, extends northeast to southwest.

The project area is situated on Quaternary bay sediments characterized by unconsolidated silty clays at the surface and silts and fine sands at 4.5 to 6 meters deep (HQ AMC 2003). The soil type is Antioch Loam, described as a moderately well drained soil ranging in color from yellowish brown (10YR 5/6) to pale brown (10YR 6/3) (USDA 1977). The lower soil layers are extremely dense and compact, resulting in slow permeability. Average annual rainfall in the project area is approximately 16 to 18 inches with most rain falling between the months of December and February (USDA 1977).

Figure 1. Aerial orthophoto showing California and the project area.

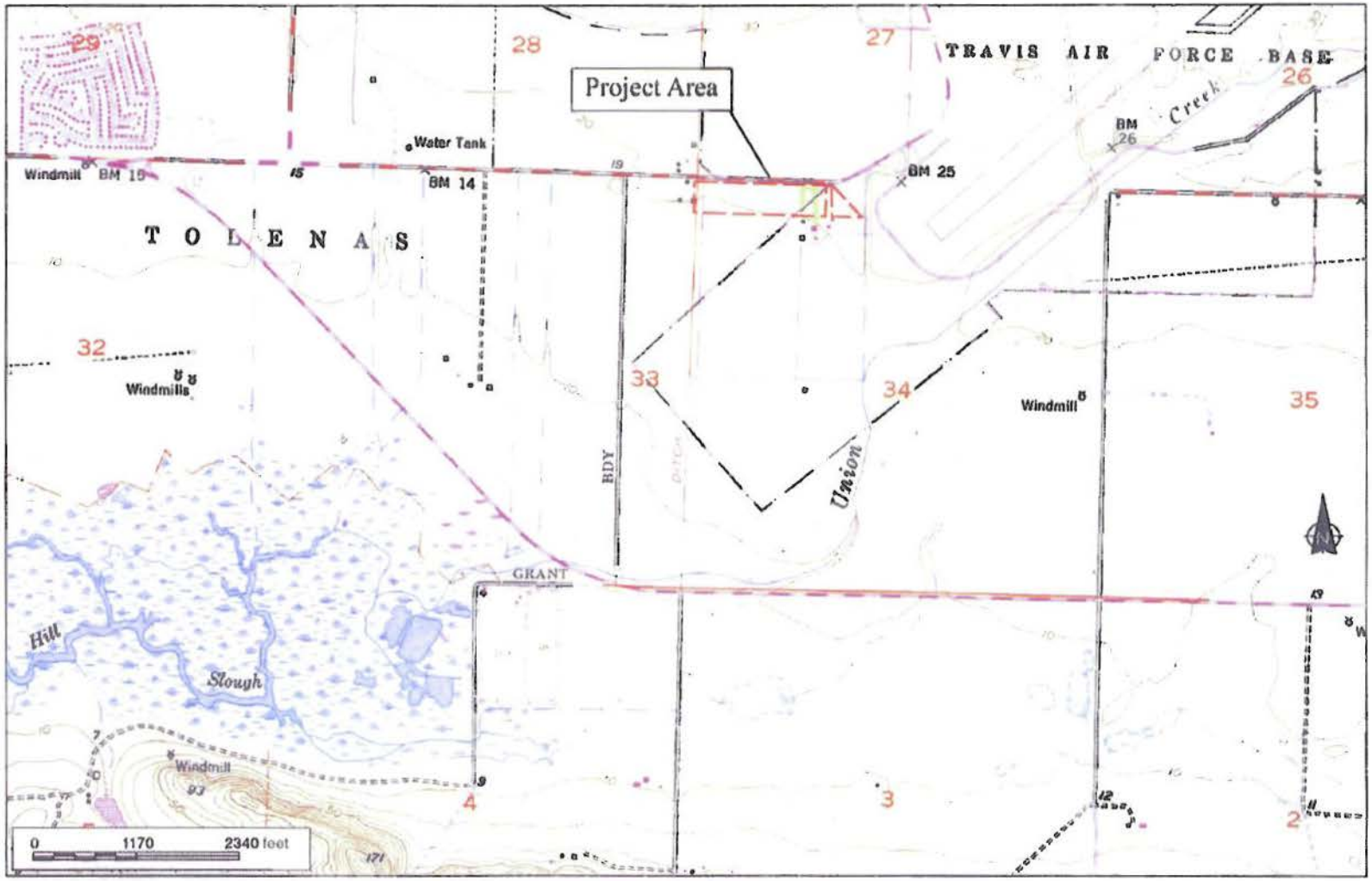


Figure 2. Project area location (portion of 1:24000 USGS Denverton Quadrangle).

Figure 3. Overview of project area, view northeast.

Figure 4. Overview of project area, view south.

2.2 CULTURAL

2.2.1 Prehistoric Overview

Investigations into the prehistoric sites of aboriginal peoples of California dating from approximately 4,000 BP (before present) to present have allowed archaeologists to document how these early groups might have lived. Very early sites, such as those dating from 10,000 to 11,000 BP, are less well-represented in the archaeological record. According to the Travis AFB ICRMP (2003:3-2):

> The lack of such sites may be attributable to the limited preservation of charcoal, bone and shell and the strong probability that some early coastal sites have been inundated or eroded away by a rising sea level. Conversely, interior sites may be deeply buried by alluvial and colluvial sediments.

Known archaeological sites reveal an apparent shift from game animal to plant food subsistence after 6000 BP. Artifacts such as hand stones, milling stones, mortars and pestles, mullers, chipped stone tools, bone implements, and shell ornaments began to appear about 3000 BP (ICRMP 2003:3-4):

> for example in the San Francisco Bay region mollusks seem to have been most important, while in the Santa Barbara area the entire range of marine adaptation developed, including pelagic fishing, mollusk gathering, and sea-mammal hunting. The rich acorn resources in all parts of California brought about a change in grinding implements, with food processing implements such as milling stones for small seed grinding, and stone-bowl mortars, hopper-slab mortars, or bedrock mortars ultimately gaining predominance in different areas The bow and its lighter tipped arrows were probably introduced around 1,500 to 2,000 years ago (Elsasser 1978).

The development of "regional prehistoric cultures" in California began approximately 2500 BP (Elsasser 1978). Archaeologists often refer to these regional prehistoric cultures as falling within five separate areas: Central California, North Coast Ranges, Northwestern California, Sierra Nevada, and Southern California Coast. The project area is located in the Central California region, which includes the Sacramento-San Joaquin Delta area and the San Francisco Bay area. The Sacramento-San Joaquin Delta area is described as having (ICRMP 2003:3-4):

> . . . variable terrain, including grassland, timberland, and woodland and chaparral in the foothills of the Sierra and in the Coast Range. Particularly given the presence of the delta, the area was enormously rich. Thus, a full range of staple foods was available to the early cultures, such as antelope, tule elk, deer, water birds, and fish for game, and the all-important acorn. Judging from the number of sites and the richness of artifacts found in them, the Sacramento-San Joaquin Delta region must have been an innovative center of cultural development.

2.2.1.1 The Southern Patwin

At the time of Spanish contact, circa AD 1750, it is estimated that more than 500 tribelets occupied California. The Patwin formed the southernmost territory of the Sacramento Valley and the Southern Patwin occupied the area specifically in and surrounding Travis AFB. The Wintun, a division of the Penutian-speaking Indians of the Sacramento Valley region, include the Nomlaki and Patwin Indians. Patwin village sites have been noted near Suisun City, Napa, and Vacaville (HQ AMC 1995). The Southern Patwin are acknowledged for "pitted hammerstones" and wooden mortars (ICRMP 2003:3-6). In terms of resource exploitation (ICRMP 2003:3-7):

> The Patwin were intensive hunters and gatherers, exploiting a variety of resources. Migratory fish (salmon and steelhead trout) were harvested from the Sacramento River; and fowl were taken from

> the rivers and marshes. Deer, tule elk, and pronghorn were hunted in the grasslands; the meat was then dried and pounded with a short pestle. Buckeyes and acorns were shelled, ground into a flour using a mortar and pestle, leached to remove the tannic acid, and then used to make bread, mush, and soups. Grass-seeds, corms, bulbs, greens, sunflower seeds, and blackberries were staples in the Patwin diet. Wild tobacco was used for ritual and medicinal purposes.

In the 19th century malaria and small pox had severely reduced Southern Patwin populations. By the 1920s Southern Patwin peoples had left the Central Valley region (ICRMP 2003:3-5).

2.2.2 Historical Overview

The arrival of the Spanish into California in 1750 is commonly referred to as the Spanish Mission Period. The Spanish occupied California for 80 years, establishing missions throughout the land and developing the first European irrigation methods for agriculture. By the 1830s Spanish rule was replaced by Mexican rule followed soon after by incorporation into the United States. Land-use and resource exploitation changed rapidly during this period (ICRMP 2003:3-8):

> The face of California agriculture was altered significantly in the 1840s with the end of Mexican rule and the coming of American statehood, especially with the flood of immigrants that began entering the state in 1849 after the discovery of gold in the Sierras (Paul 1973:18). Cattle ranching brought in steady profits for the rancheros as growing cities and the gold rush provided a market for the beef (Jelinek 1979:24; Liebman 1983:8).

While cattle ranching began to spread, the demand to feed miners in nearby San Francisco and Sacramento became a concern. Cereal grain, predominately wheat cultivation, provided a steady food supply to the region. By 1903, farmers could no longer keep up with the rising rate of wheat consumption and began importing wheat into California (ICRMP 2003:3-9):

> The end of the wheat bonanza could have been fatal to the health of California agriculture had not a specialty crop industry developed. By the late 1860s, viticulture and orchard crop production had expanded throughout the state. Initially, production in Northern California centered on apples, but later expanded to include plums, peaches, apricots, and pears (Jelinek 1979:51–53).

2.2.2.1 Solano County

Jose Francisco Armijo received a land grant in the Suisun and Tolenas valleys in 1839, what would later become Solano County. In 1842, the Vaca and Peria families received land grants centered on the Lagoon and Vaca valleys in the northern part of what would become Solano County. John Wolfskill, also in 1842, settled a land grant on Putah Creek in the future Solano County (ICRMP 2003:3-9).

By 1875 agriculture remained economically strong, however tufa and basalt quarries began to employ an enormous portion of Solano County's population. Before the quarry industry tapered off in the early 1900s, Solano County provided stone for San Francisco's construction needs.

The first state highway constructed between 1912 and 1914 went directly through Solano County. Population in the city of Fairfield increased dramatically during this time as the majority of agricultural land to the west had previously been purchased. The Depression in the 1930s decreased the farming industry by as much as fifty percent (ICRMP 2003:3-10):

> The area around Travis AFB appears to have been minimally affected by these events which had a greater impact in the towns and rich agricultural lands located further to the south and west along the

Sacramento River delta and in other areas of the greater Sacramento Valley. Grazing, with perhaps some secondary grain cultivation, remained the principal land use of the immediate Travis area until 1942.

An aerial photo dated 25 August 1937 reveals an extensive amount of grazing tract and agriculture land in the project area (Figure 5). After the construction of Travis AFB in 1942, originally intended to be used as a temporary bomber base, construction efforts began to expand. It became clear that the Travis AFB site was an excellent air transport location because of prevailing winds. By 1957, Travis AFB obtained the mission of centralized maintenance for all 5th BW aircraft (ICRMP 2003:3-33). Aerial photos from this period indicated that land-use in the present project area had remained quite constant (Figure 6). Currently, Travis AFB is the home of the Fifteenth Expeditionary Task Force, 615th Contingency Response Wing and 60th Air Mobility Wing and remains at the same location since its construction in 1942.

2.3 Cultural Resources at Travis AFB

The Integrated Cultural Resource Management Plan (ICRMP 2003) identified ten archaeological sites on Travis AFB (Table 1). The sites consisted of three prehistoric and seven historical sites. All seven historical sites are ineligible for the National Register of Historic Places (NRHP). Out of the ten recorded archaeological sites on Travis AFB, none are located near the current project area.

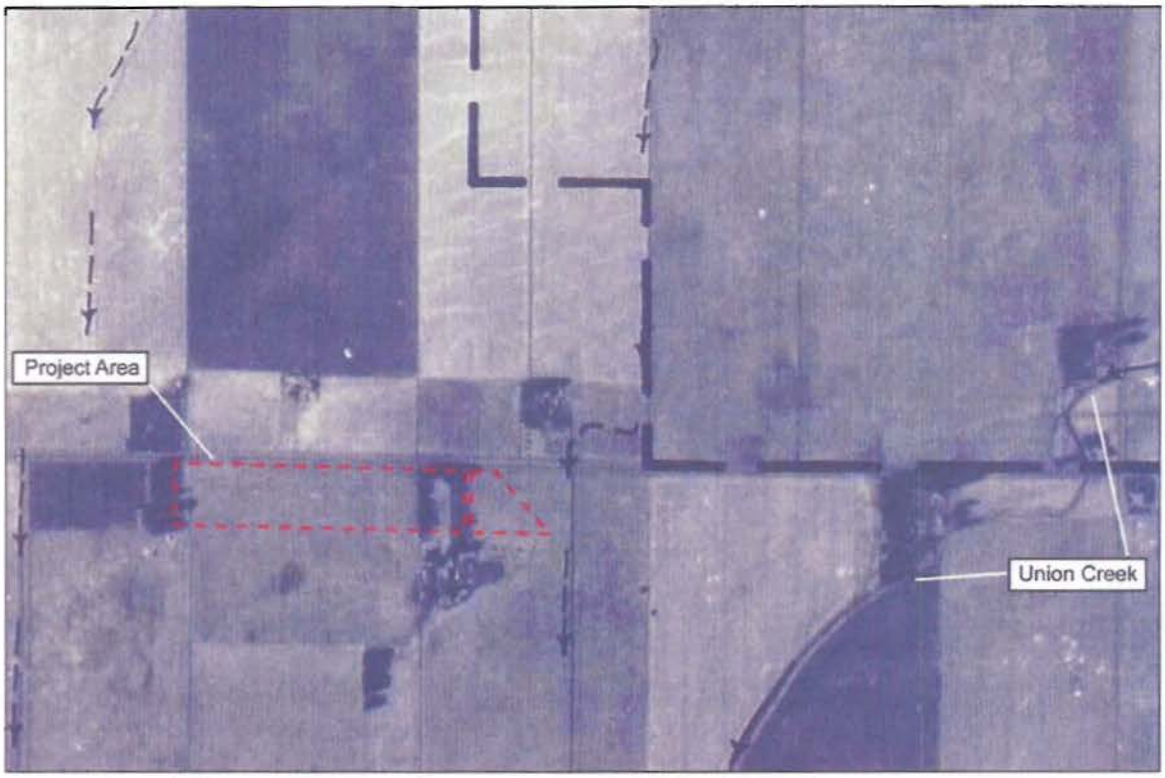


Figure 5. Detail of 1937 aerial photo showing project area and Union Creek.

Figure 6. Detail of 1957 aerial photo showing project area and Union Creek.

Table 1. Archaeological Sites on Travis AFB (from HQ AMC 2003:3–66)

Site	Description	Occupation Date	Status
CA-Sol-313	Lithic Site	Unknown	Disturbed, destroyed for construction
CA-Sol-314	Lithic Site	Unknown	Data recovery, destroyed for construction
CA-CCo-252	Shell midden	Unknown	Destroyed or located off TAFB
CA-Sol-383/H	Historic road	Early 20th Century	Unknown
TAFB-H-02	Farmstead	Late 19th Century	Not NRHP Eligible
TAFB-H-03	Farmstead	Late 19th Century	Not NRHP Eligible
TAFB-H-05	Farmstead	Late 19th Century	Not NRHP Eligible
TAFB-H-11	Farmstead	Disturbed/Unknown	Not NRHP Eligible
TAFB-H-18	Farmstead	Early 20th Century	Not NRHP Eligible
Golf Course	Farmstead	Early 20th Century	Not NRHP Eligible

3.0 FIELD METHODS

3.1 PRE-FIELD

Pre-field investigations included a review of historical maps, aerial photos and soil classification maps. These sources revealed an extensive amount of ranching and agricultural activities within and around the project area beginning in the 1900s. A letter was sent to the California Native American Heritage Commission to provide notification of the undertaking and to request information on issues that may be of concern to Native American parties. The Native American Heritage Commission responded that they have no record of the presence of Native American cultural resources in the project area.

3.1.1 Records and Literature Search

A record and literature search was conducted to facilitate the preparation of an overview of pre-historic and historic era land-use within and immediately surrounding the project area. Included in the search was the *California Inventory of Historical Resources* (California Department of Parks and Recreation 1976), and the California Office of Historic Preservation's *Five Views: An Ethnic Historic Site Survey for California*, *California Historical Landmarks*, *California Points of Historical Interest*, and the *Historic Properties Directory Listing*. The *Historic Properties Directory Listing* includes the National Register of Historic Places and the California Register of Historical Resources, and the most recent listings (through 8 February 2003) of the California Historical Landmarks and California Points of Historical Interest.

The literature review found that no cultural resources within the study area were listed in these inventories. The record and literature search did indicate that portions of the study area have been previously surveyed for cultural resources (Table 2).

Cultural resource survey S-005167 encompasses the southern half of the current study area. According to this study, the southeastern corner of the S-005167 study area contains "historically significant structures of the Scandia Road Ranch" (Chavez 1982). No subsequent literature was found referencing these structures. The S-005167 report indicates no evidence of cultural resources encountered within the present study area. This report was not finalized, indicating a subsequent report was to be filed. No report was found.

Cultural resource survey S-015632, performed by Argonne National Laboratory, encompassed the northern half of the current project area. Historic properties were identified during the study, however, few of the referenced 1945 buildings remain. Two prehistoric sites were identified near vernal pools, but are situated well outside the present project area.

Table 2. Previous Investigations in Project Area

Reference	Survey No.	Description
Chavez 1980	S-005167	No cultural resources identified
Argonne National Laboratory 1992	S-015632	Two prehistoric sites identified near vernal pools in 1984, located outside the current project area.

3.2 IN-FIELD

A pedestrian survey was conducted utilizing parallel transects at varying intervals (15–25 m) across the 13.63 acres to ensure adequate coverage. Most of the parcel area, however, is covered by a thick blanket of a variety of grassland species (see Section 2.1) preventing ground surface visibility. Due to this circumstance, an alternative survey method was necessary. Removing sections of vegetation by hand was an approach used to sample small areas for ground visibility.

A cursory inspection was performed within portions of the 4.97 acre parcel. Although the 4.97 acre parcel was not part of the scope-of-work, a minimal walk through was conducted.

Cultural resource survey and recordation procedures were documented in a daily log. The daily log compiled personnel data and field observations of the survey area including topography, vegetation, locational information, site interpretations, and preliminary site significance evaluations.

Identified cultural resources were to be documented on standard site forms, sketched, photographed, and located with GPS. The reconnaissance level survey was to identify and record basic characteristics of cultural resources including site type, number of features, aerial dimensions, construction methods, probable cultural affiliation and function, observed artifacts and general condition of the site. Recordation would facilitate preliminary determinations of potential site significance and an assessment of the need and potential value of future archaeological investigations.

4.0 RESULTS AND DISCUSSION

No historic properties were identified within the project area. Inspection of ground surface and shovel probes conducted by Ecology and Environment, Inc wetland specialist, Noreen Roster, indicated that there was little likelihood of subsurface cultural resources. The soil consists of very hard packed clay silt loam and all exposures yielded no evidence of cultural material.

An agricultural ditch, extending north to south through the western portion of the project area and then turning east, parallel to Peterson Road, was documented and photographed. Inspection of historical aerial photographs from 1937 (see Figure 5) and 1957 (see Figure 6) show no evidence of an agricultural ditch system within or around the project area from those periods. The USGS 1:24000 Denverton Quadrangle compiled in 1980 indicates that this ditch system was added to the map based on aerial photo revisions from 1978 (see Figure 2). Contour revisions and field check for the previous USGS Denverton Quadrangle map were compiled in 1953. Therefore, the ditch system was constructed between 1953 and 1978, and is not an historic property.

Mr. Maher, the current property owner, was contacted via telephone on 27 September 2005 by Garcia and Associates archaeologist Cassidy DeBaker. Mr. Maher communicated that the ditch system may have been constructed by Travis AFB for the release of excess treated sewage water, prior to the construction of the base's Sewage Treatment Plant. Robert C. Holmes, Cultural Resources Manager at Travis AFB, contacted the Restoration branch to investigate the use of the ditch system by Travis AFB. The Restoration branch has no data on the ditch being used for any water generated by the base. Furthermore, it is extremely unlikely Travis AFB ever discharged water to this ditch since to do so would have required 3 miles of piping. No records indicate that the water from the water treatment plant was ever discharged to this ditch.

5.0 CONCLUSIONS

A cultural resource survey was conducted by Garcia and Associates for the installation of a new gate entrance at the south corner of Travis AFB.

Research objectives for the project area were to determine the presence or absence of significant cultural resources, to assess the nature and chronology of cultural sites and/or features, and to assess the significance of the cultural resources identified. These objectives were pursued in accordance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, and the Secretary of the Interior's Guidelines for Historic Preservation.

No historic properties were identified within the 13.63 acre project area. No historic properties were identified within the adjacent 4.97 acre parcel, however, due to the cursory nature of the inspection, it is recommended that any future work in the area should require additional cultural resources investigation.

6.0 REFERENCES

California Department of Parks and Recreation

1973 *California Historical Landmarks*. State of California, Department of Parks and Recreation, Sacramento, California

Chavez, D.

1980 Cultural Resources Evaluation of the North Bay Aqueduct Alignment Alternatives (Routes 1, 4, and 6), Solano County, California. Appendix E, U.S. Army Corps of Engineers.

1982 Cultural Resources Evaluation of the North Bay Aqueduct Alignment Alternatives (Routes 1, 4, and 6), Solano County, California. Appendix E, U.S. Army Corps of Engineers.

Elsasser, Albert B.

1978 Development of Regional Prehistoric Cultures. In Handbook of North American Indians - California, vol. 8. Edited by Robert F. Heizer. Smithsonian Institution, Washington, D.C.

HQ AMC

2003 *Environmental Assessment West Coast Basing of C-17 Aircraft.* Prepared for the Department of Air Force, Headquarters,(HQ) Air Mobility Command (AMC), Scott Air Force Base, Illinois.

ICRMP

2003 *Integrated Cultural Resources Management Plan for Travis Air Force Base, Fairfield, California.* Prepared for the USAF Air Mobility Command. Prepared by Parsons, Inc.

Jelinek, L.J.

1979 *Harvest Empire: A History of California Agriculture*. Boyd & Fraser Publishing Company, San Francisco, California.

Liebman, E.

1983 *California Farmland: A History of Large Agricultural Landholdings*. Krowman & Allanheld, Totowa, New Jersey.

USDA

1977 Soil Survey of Solano County, California. United States Department of Agriculture, Soil Conservation Service in cooperation with the University of California Agricultural Experiment Station.

D Air Force Form 813

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS

Report Control Symbol RCS: 04-28

INSTRUCTIONS: *Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).*

SECTION I - PROPONENT INFORMATION SCANNED /FILE - Book

1. TO *(Environmental Planning Function)*	2. FROM *(Proponent organization and functional address symbol)*	2a. TELEPHONE NO.
60 CES/CEVP	60 CES/CECC	424-0882

3. TITLE OF PROPOSED ACTION
C-17/UTILITIES/ROADS/LAND ACQUISITION (SOUTH GATE) FE827 04 3:03F

4. PURPOSE AND NEED FOR ACTION *(Identify decision to be made and need date)*
TO ASSURE THAT ALL ENVIRONMENTAL REQUIREMENTS ARE PROPERLY IDENTIFIED AND ADDRESSED PRIOR TO CONSTRUCTION AND LAND ACQUISITION

5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES *(DOPAA) (Provide sufficient details for evaluation of the total action.)*
CONSTRUCT SOUTH GATE AND UTILITIES AT BEDDOWN AREA INCLUDING LAND ACQUISITION OF APPROX 12.5 ACRES AND ALL OTHER NECESSARY EIAP DOCUMENTATION/SURVEYS.

6. PROPONENT APPROVAL *(Name and Grade)*	6a. SIGNATURE	6b. DATE
YU-MING KUO, GS-12	Y. M. Kuo	27 Feb 04

SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. *(Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)*	+	0	-	U
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE *(Noise, accident potential, encroachment, etc.)*				
8. AIR QUALITY *(Emissions, attainment status, state implementation plan, etc.)*				
9. WATER RESOURCES *(Quality, quantity, source, etc.)*				
10. SAFETY AND OCCUPATIONAL HEALTH *(Asbestos/radiation/chemical exposure, explosives safety quantity-distance, etc.)*				
11. HAZARDOUS MATERIALS/WASTE *(Use/storage/generation, solid waste, etc.)*				
12. BIOLOGICAL RESOURCES *(Wetlands/floodplains, flora, fauna, etc.)*				U
13. CULTURAL RESOURCES *(Native American burial sites, archaeological, historical, etc.)*				U
14. GEOLOGY AND SOILS *(Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)*				
15. SOCIOECONOMIC *(Employment/population projections, school and local fiscal impacts, etc.)*				
16. OTHER *(Potential impacts not addressed above.)*				U

SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION

17.
- [ ] PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # _____ ; OR
- [X] PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.

18. REMARKS
AN ENVIRONMENTAL ASSESSMENT IS NEEDED TO DETERMINE ENVIRONMENTAL IMPACTS OF CONSTRUCTION ESPECIALLY ON VERNAL POOLS/WETLANDS PRESENT IN THE AREA. EN ENVIRONMENTAL BASELINE SURVEY IS ALSO NEEDED TO DOCUMENT THE ENVIRONMENTAL CONDITION OF THE PROPERTY THAT WILL BE ACQUIRED BY THE AIR FORCE FOR CONSTRUCTION OF THE NEW SOUTH GATE.

19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION *(Name and Grade)*	19a. SIGNATURE	19b. DATE
TROY MARTINSON, P.E. Chief, Environmental Flight		3/4/04

PLS SEE ATTACHED 60 CES/CD MEMO, DATED 24 MAR 03, MAP AND CONCEPTUAL DESIGN.

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

MAR 2 4 2003

MEMORANDUM FOR HQ AMC/CEP
ATTN: J. Deckard
507 Symington Drive
Scott AFB IL 62225-5022

FROM: 60 CES/CD
191 W Street
Travis AFB CA 94535

SUBJECT: Request for Appraisal

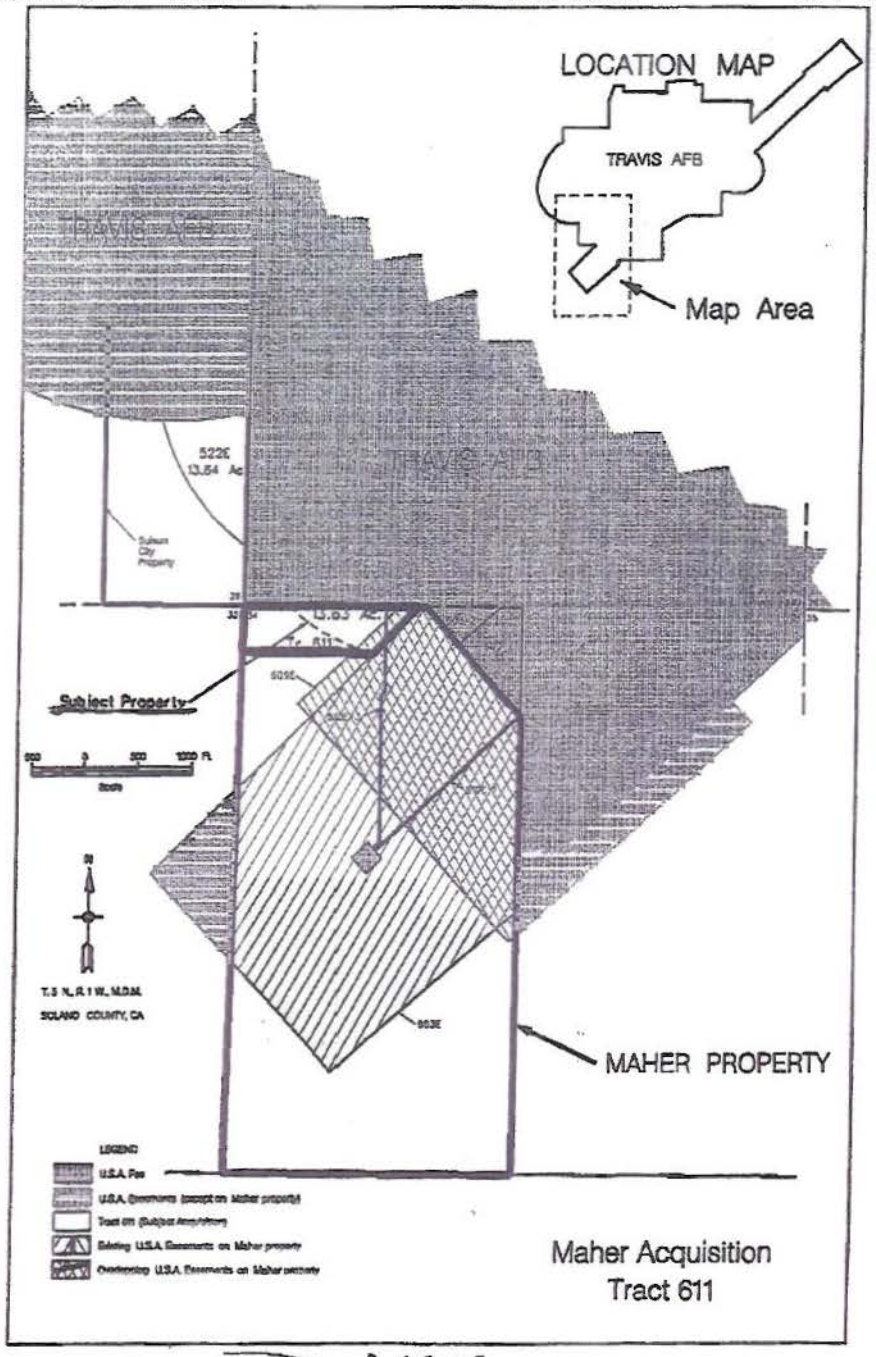
1. Request your office direct the Sacramento Corps of Engineers to complete an appraisal on approximately 12.5 acres of land as shown on the attached map. The map has a scale of 1-inch equals 100 feet.

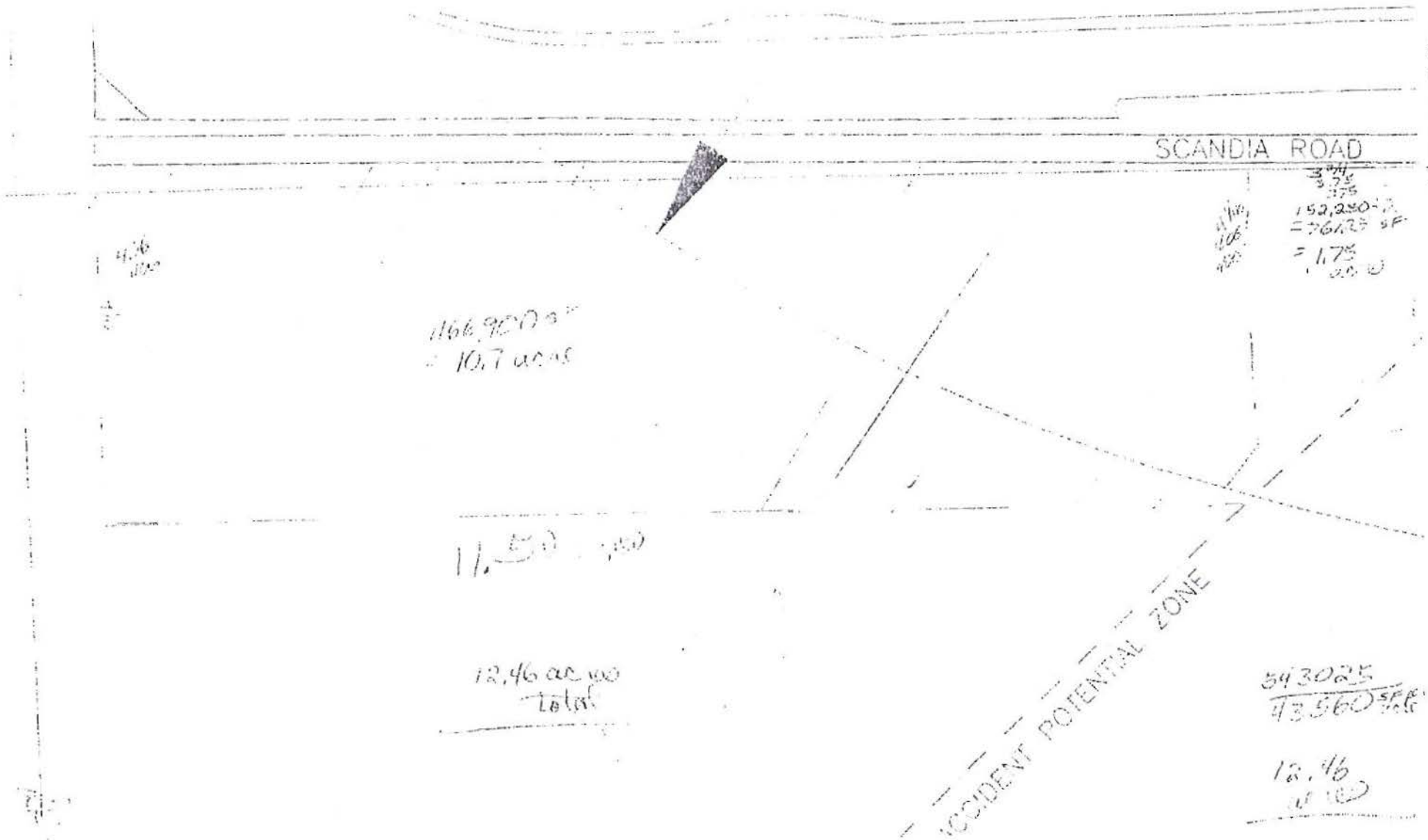
2. The acquisition of this property is needed as part of the C-17 program at Travis AFB. Areas of concern regarding QD zones, force protection and fence setback have been considered and incorporated. The new gatehouse and BITC facilities will be located outside of any QD zones.

3. If you have any questions, please contact Yvonne Bush, Real Property, DSN 837-4362, or Vee Kaufman, Engineering, DSN 837-0897.

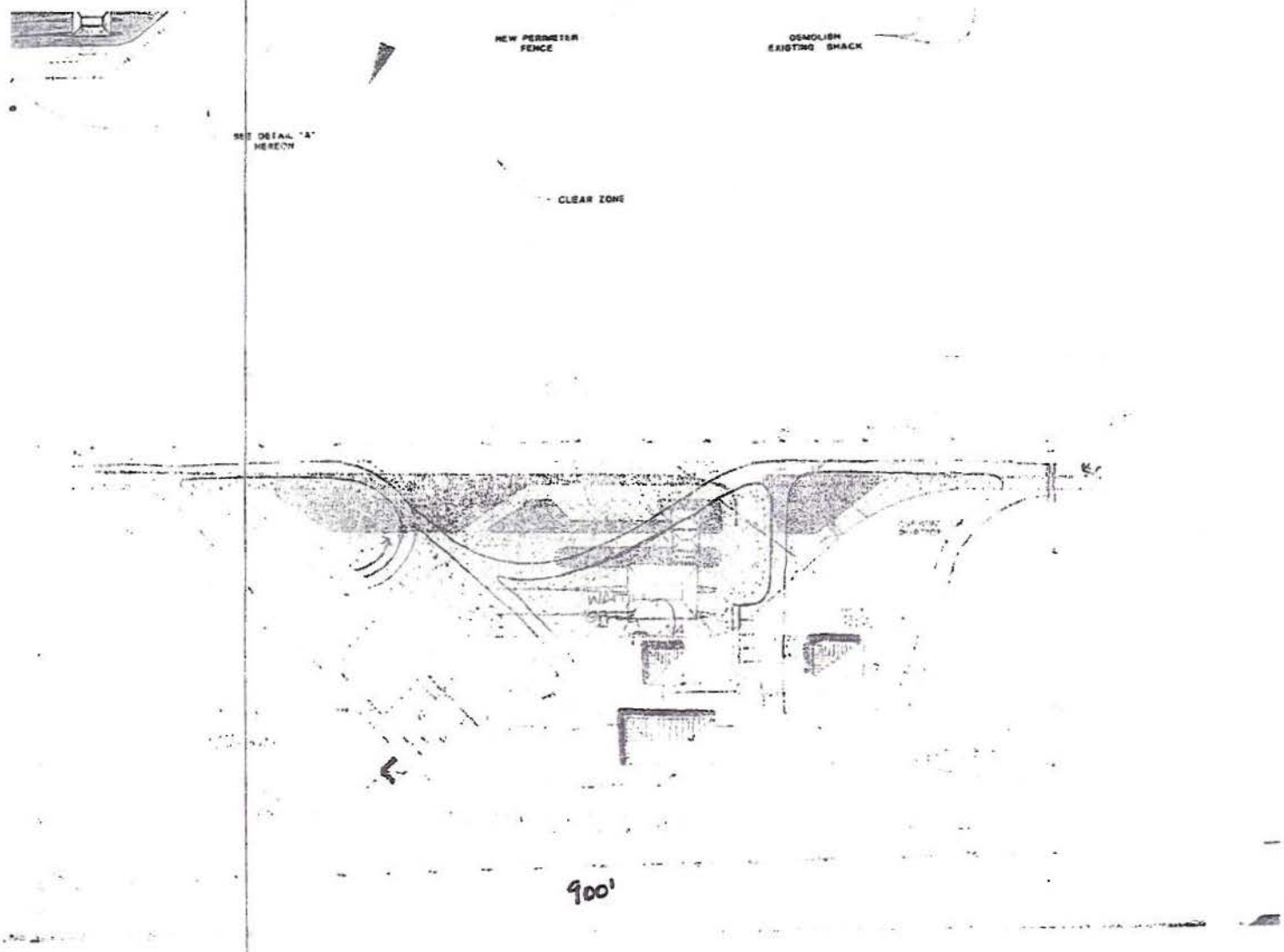
JOHN I. SCHOPF, GM-14, DAF
Deputy Base Civil Engineer

Attachment:
Area Map

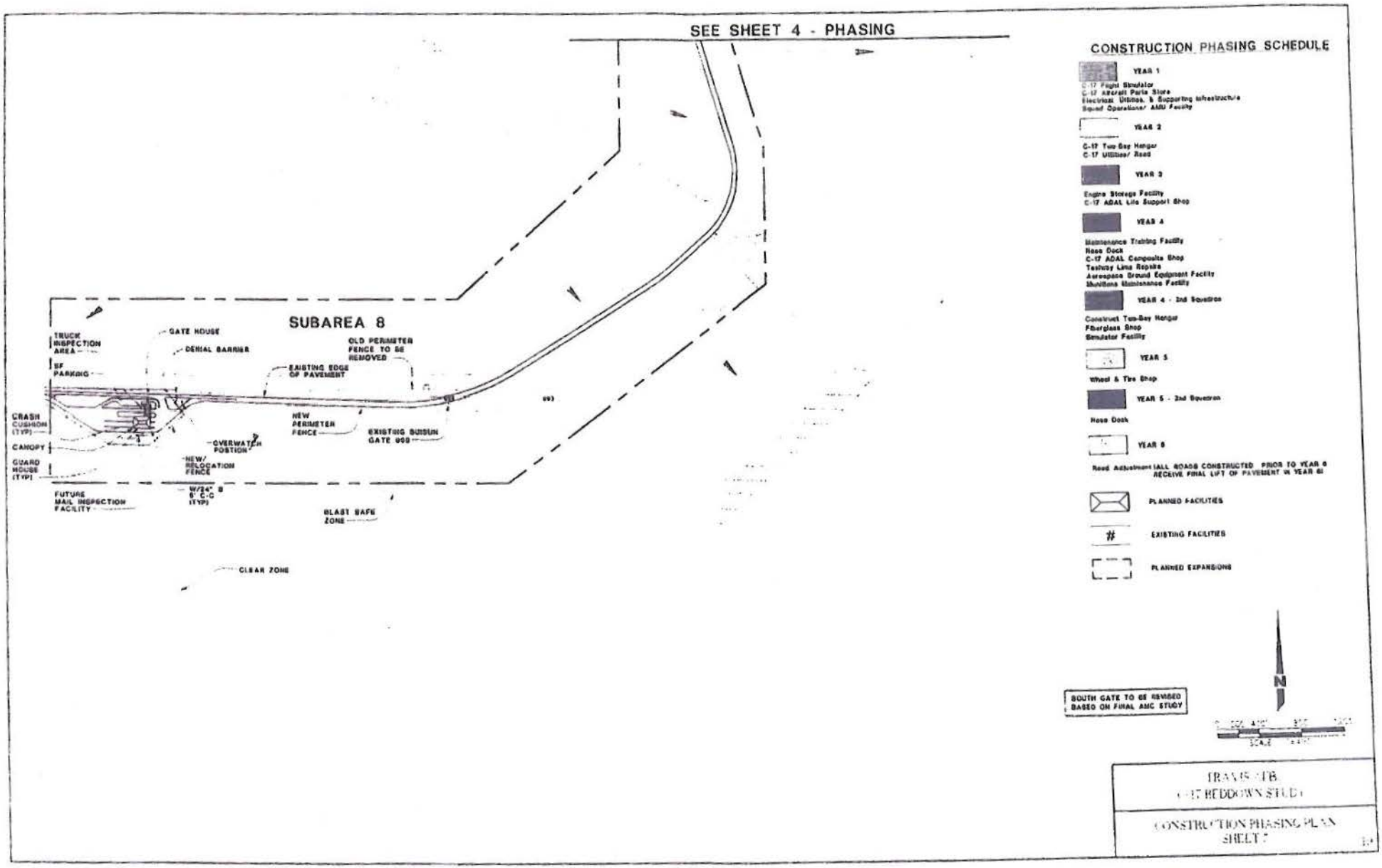

LOCATION MAP
TRAVIS AFB
Map Area
TRAVIS AFB
Subject Property
MAHER PROPERTY
Maher Acquisition
Tract 611



fr: Tom Wiehl on 7/17/03
revisions by Jeff White - AHC

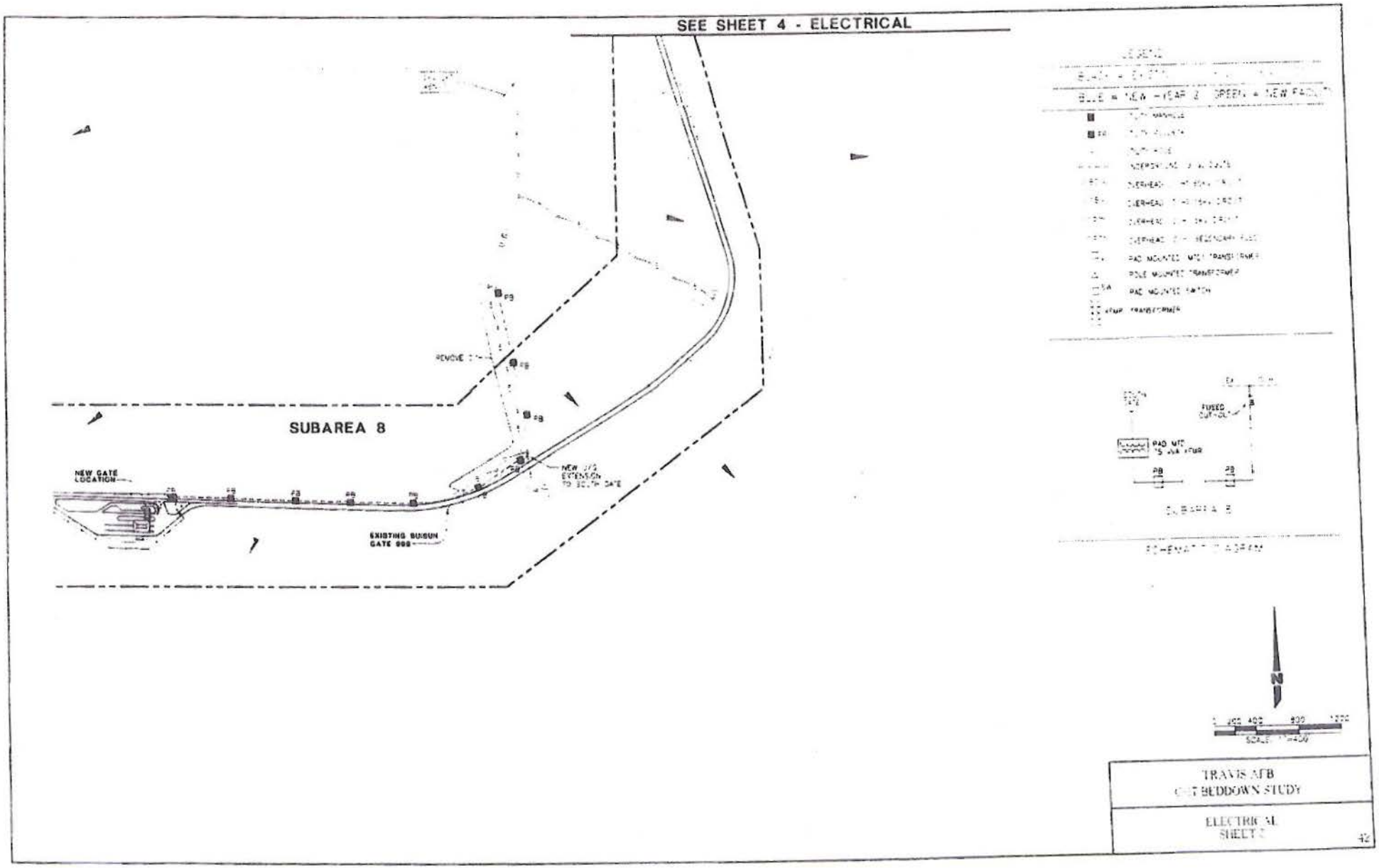


South Gate Concept Design



TRAVIS AFB
(C-17 BEDDOWN STUDY)

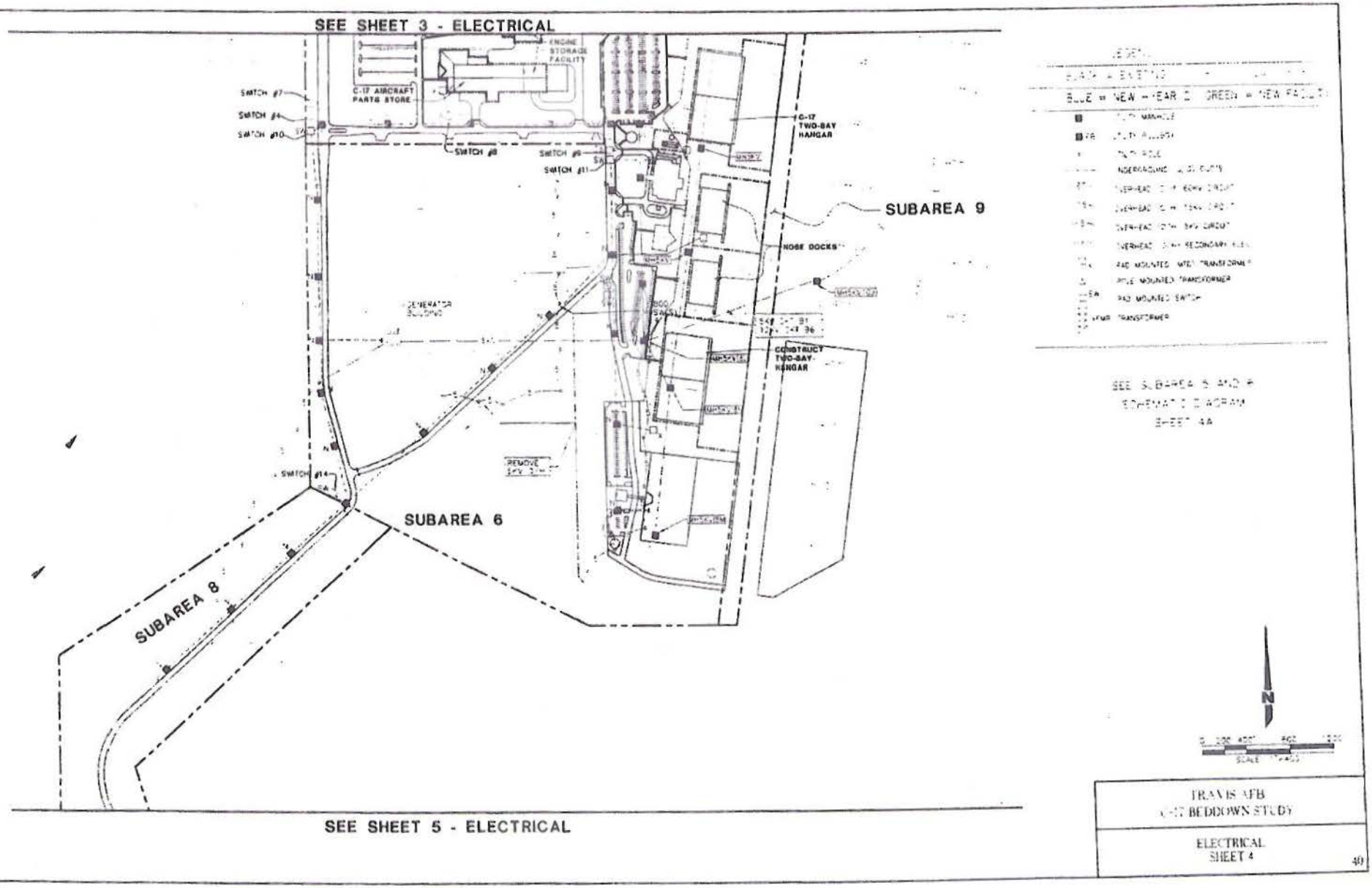
CONSTRUCTION PHASING PLAN
SHEET 5

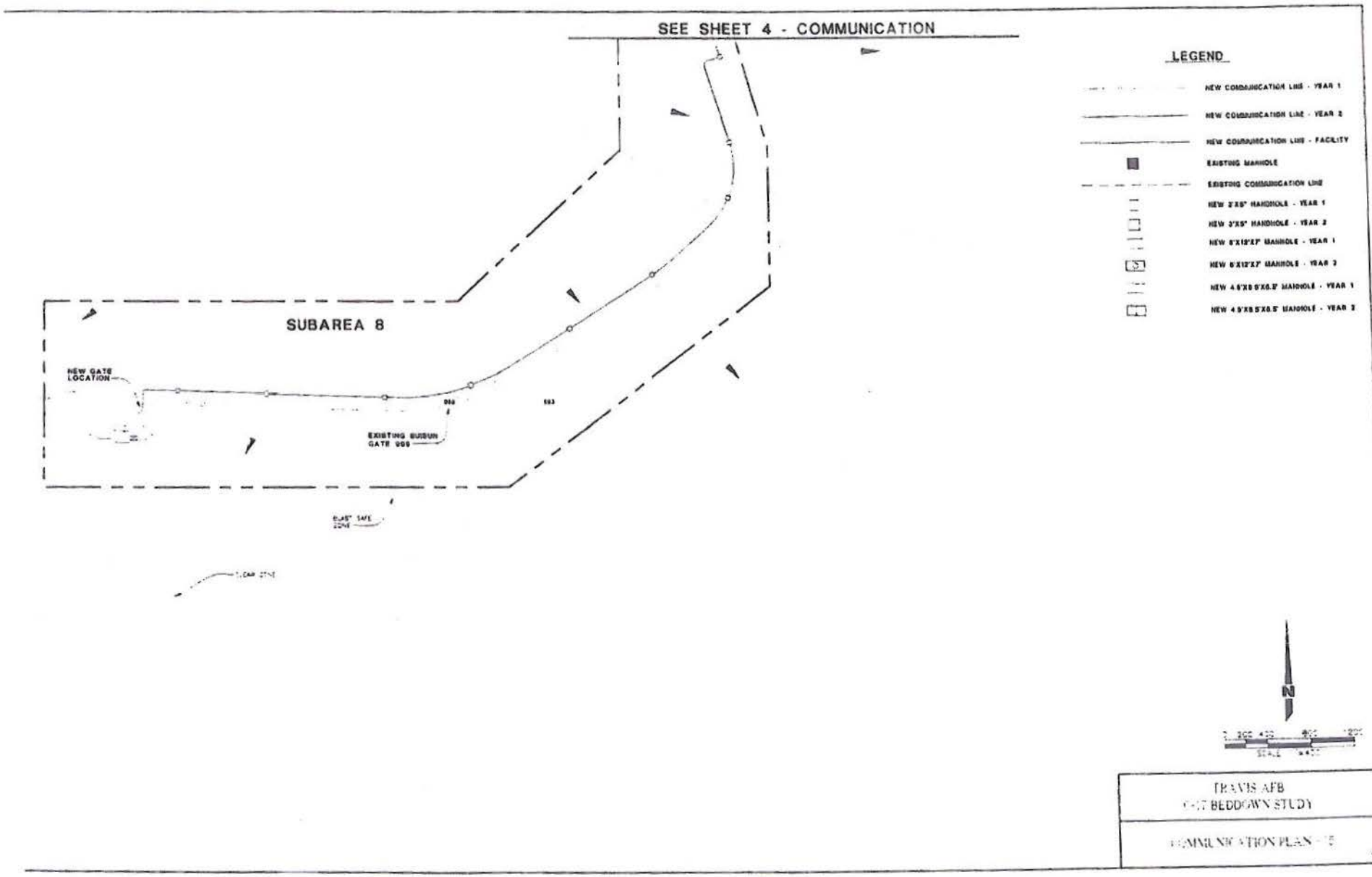


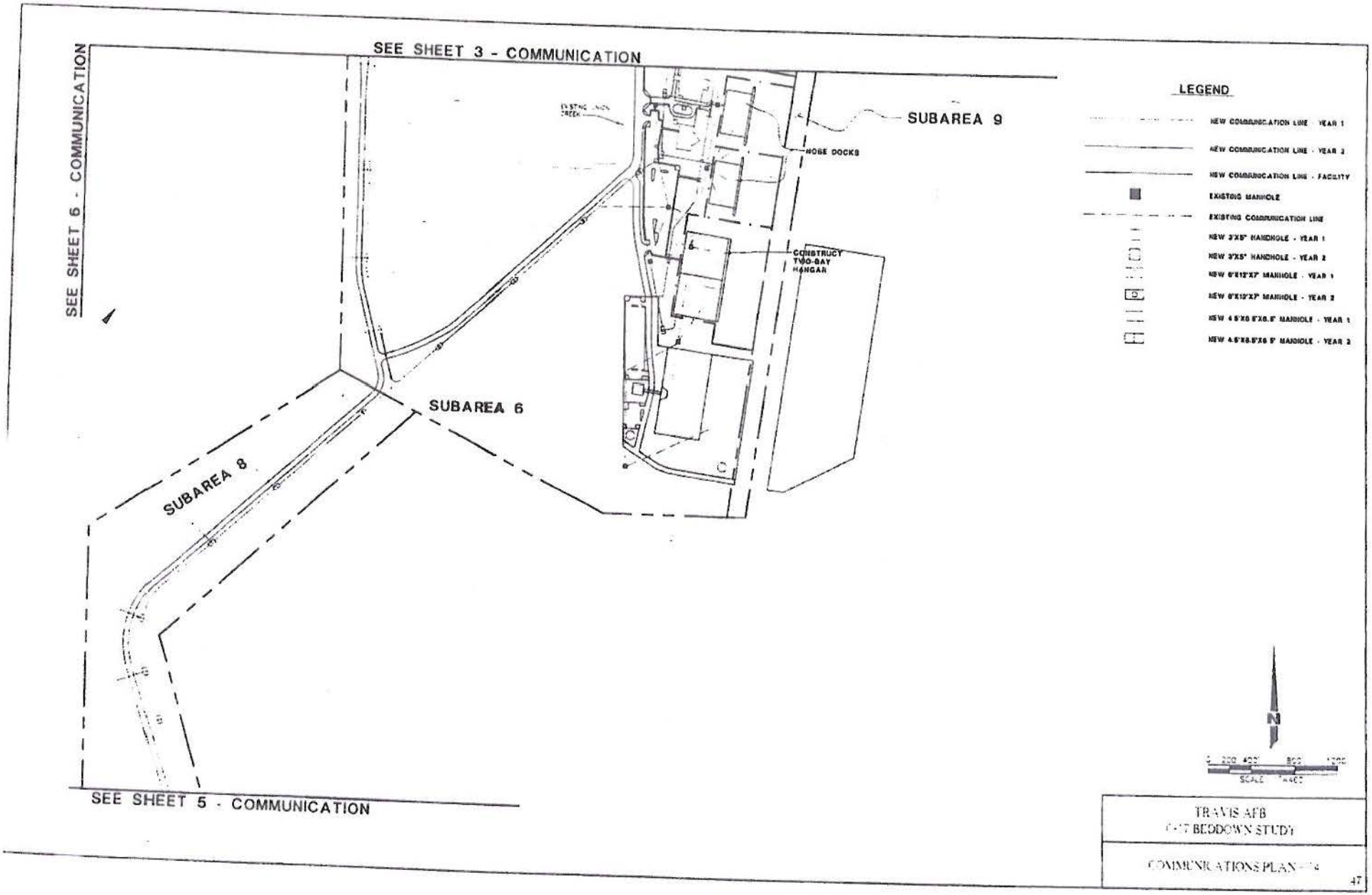
TRAVIS AFB
CBT BEDDOWN STUDY

ELECTRICAL
SHEET 2

42

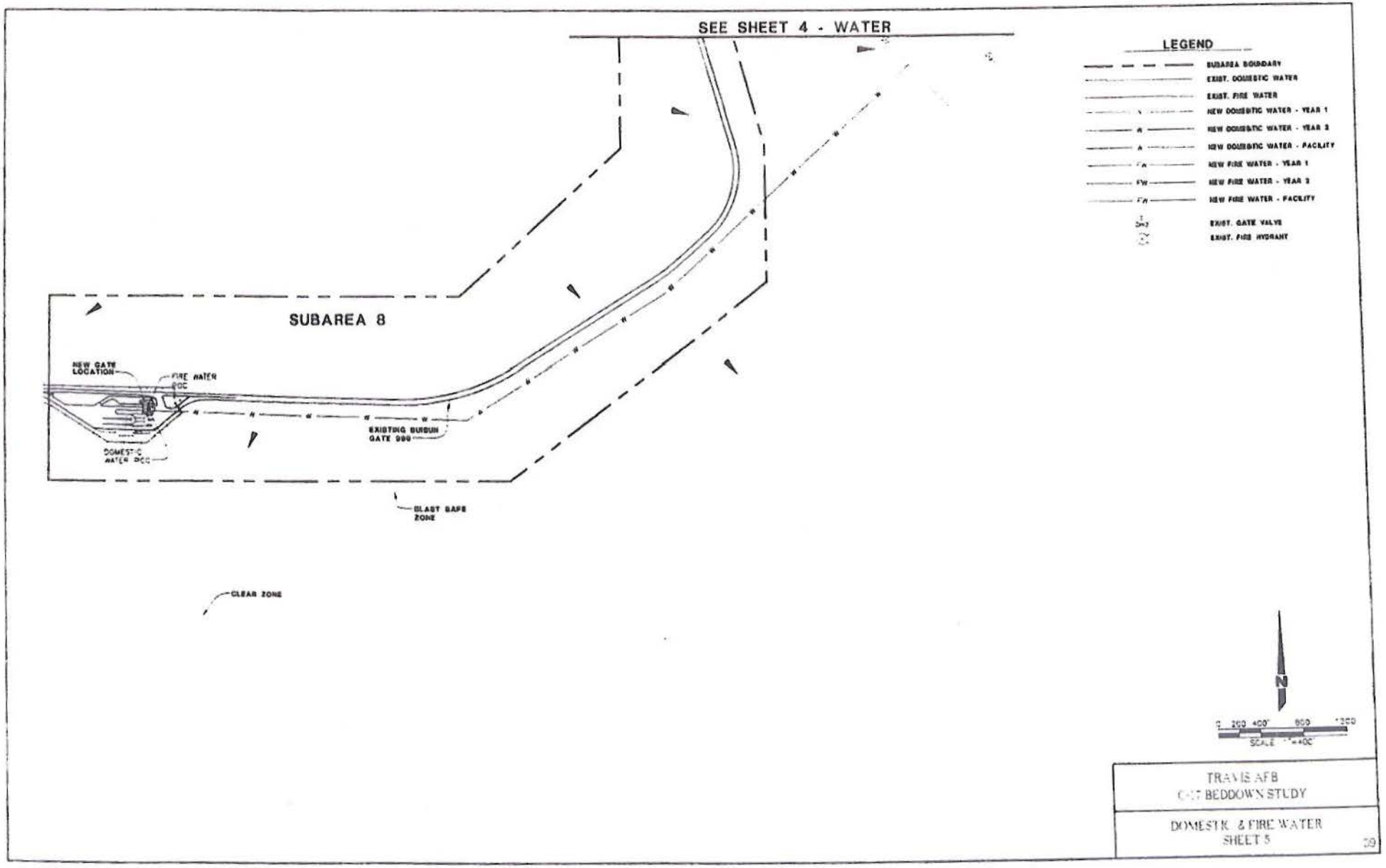

SEE SHEET 3 - ELECTRICAL
ENGINE STORAGE FACILITY
C-17 AIRCRAFT PARTS STORE
SWITCH #7
SWITCH #4
SWITCH #10
SWITCH #8
SWITCH #9
SWITCH #11
C-17 TWO-BAY HANGAR
SUBAREA 9
NOSE DOCKS
GENERATOR BUILDING
CONSTRUCT TWO-BAY HANGAR
REMOVE
SWITCH #14
SUBAREA 6
SUBAREA 8
SEE SHEET 5 - ELECTRICAL
SEE SUBAREA 5 AND 6 SCHEMATIC DIAGRAM SHEET 4A
N
TRAVIS AFB
C-17 BEDDOWN STUDY
ELECTRICAL
SHEET 4


SEE SHEET 4 - COMMUNICATION
SUBAREA 8
NEW GATE LOCATION
EXISTING GUSUN GATE 009
LEGEND
NEW COMMUNICATION LINE - YEAR 1
NEW COMMUNICATION LINE - YEAR 2
NEW COMMUNICATION LINE - FACILITY
EXISTING MANHOLE
EXISTING COMMUNICATION LINE
NEW 2'X5" HANDHOLE - YEAR 1
NEW 2'X5" HANDHOLE - YEAR 2
NEW 6'X12'X7' MANHOLE - YEAR 1
NEW 6'X12'X7' MANHOLE - YEAR 2
N
TRAVIS AFB
C-17 BEDDOWN STUDY



TRAVIS AFB
C-17 BEDDOWN STUDY

COMMUNICATIONS PLAN


SEE SHEET 4 - WATER
LEGEND
SUBAREA BOUNDARY
EXIST. DOMESTIC WATER
EXIST. FIRE WATER
NEW DOMESTIC WATER - YEAR 1
NEW DOMESTIC WATER - YEAR 2
NEW DOMESTIC WATER - FACILITY
NEW FIRE WATER - YEAR 1
NEW FIRE WATER - YEAR 2
NEW FIRE WATER - FACILITY
EXIST. GATE VALVE
EXIST. FIRE HYDRANT
SUBAREA 8
NEW GATE LOCATION
FIRE WATER
DOMESTIC WATER
EXISTING BURGIN GATE 900
BLAST SAFE ZONE
CLEAR ZONE
N
0 200 400' 800 1200
SCALE 1" = 400'
TRAVIS AFB
C-17 BEDDOWN STUDY
DOMESTIC & FIRE WATER
SHEET 5

AF FORM 813 REVIEW RECORD

REVIEW THE ATTACHED FOR ALL CONCERNS IN YOUR AREA OF THE AF FORM 813 REVIEW. IF APPLICABLE, ANNOTATE YOUR COMMENTS ON 60 AMW FORM 149 AND ATTACH TO THIS REVIEW RECORD (FILL OUT ALL APPLICABLE BLOCKS). IF USING ONE CONTINUOUS FORM FOR SEVERAL INDIVIDUALS, CLEARLY ANNOTATE YOUR NAME NEXT TO YOUR COMMENTS. ONCE YOU HAVE REVIEWED AND MADE COMMENTS, PERSONALLY HAND DELIVER THIS TO THE NEXT REVIEWER; CEV IS COMMITTED TO CUSTOMER SATISFACTION, WE STRIVE TO RETURN AN ANSWER IN ONE BUSINESS WEEK.

PROJECT TITLE: C-17 UTILITIES/ROADS/LAND ACQUISITION AT SOUTH GATE | **04-28**

RECEIVED: 27 FEB 04 **CEV'S SUSPENSE: 12 MAR 04**

ACTION OFFICE	Initial	Date In	Date Out	REMARKS
MSgt Santiago/Rudy Pontemayor 4-7134/4-8354	RMP	4/27/04	4/27/04	
Chief of Programs, Capt Frost 4-7417				
Xuyen Lieu 4-7417				
Chief, Environmental Flight, Troy Martinson, 4-7515	BK			
60 CES/CEVP				
☐ CATEX				
☒ EA				FOR SOUTH GATE
☐ FOR FURTHER CEV COORDINATION				
☒ CEVC MELISSA MALAKOS, 4-7516				
☒ CEVN LT ~~BADIANO~~ CRUZ, 4-3897		3/3/04	3/4/04	
☐ CEVR MARK SMITH, 4-3062				
☐ CEVV ARVEY ANDREWS, 4-7514				
☐ COMMUNITY PLANNER, WAYNE WILLIAMS, 4-4477				
☐ SOCIO-ECONOMIC				
☒ LEGAL, GREG PARROTT, 4-1560 NDZ				

E Air Force Form 1391

1. COMPONENT	FY 2005 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
AIR FORCE	(computer generated)	

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
TRAVIS AIR FORCE BASE, CALIFORNIA	C-17 UTILITIES/ROADS/LAND ACQUISITION

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
41130	851-147	XDAT043012	12,844

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT	COST
C-17 UTILITIES/ROADS	LS			11,153
SOUTH GATE ROADWORK	LS			(525)
SOUTH GATE UTILITIES	LS			(250)
SOUTH GATE FENCING	LM	420	176	(74)
SOUTH GATE GUARDHOUSE/OVERWATCH	EA	5	16,000	(80)
SOUTH GATE GATEHOUSE	SM	38	2,130	(81)
SOUTH GATE LIGHTING	LS			(483)
SOUTH GATE CANOPY	SM	335	1,080	(362)
SOUTH GATE VEHICLE ARRESTING SYSTEM	LS			(350)
SOUTH GATE SECURITY CAMERAS	LS			(95)
SOUTH GATE LANDSCAPING	LS			(350)
SOUTH GATE FIELD OFFICE	SM	45	2,250	(101)
SOUTH GATE COMMUNICATIONS	LS			(62)
SOUTH GATE POST MOUNTED MIRRORS	EA	6	667	(4)
SOUTH GATE UTILITIES/DRAINAGE	LS			(350)
ELECTRICAL	LM	2,327	757	(1,762)
WATER	LM	7,312	141	(1,031)
SEWER	LS			(595)
NATURAL GAS	LM	2,348	164	(385)
COMMUNICATIONS	LM	4,916	321	(1,578)
PAVEMENTS	SM	54,900	48	(2,635)
SUPPORTING FACILITIES				389
DEMOLITION	LS			($0)
LAND ACQUISITION (12.5 ACRES)	AC	13	25,200	(328)
SUBTOTAL				11,540
CONTINGENCY (5.0 %)				577
TOTAL CONTRACT COST				12,117
SUPERVISION, INSPECTION AND OVERHEAD (6.0 %)				727
TOTAL REQUEST				12,844
TOTAL REQUEST (ROUNDED)				12,844

10. Description of Proposed Construction: Construct gate and utilities at beddown area including approximately 12.5 acres land acquisition, and all other necessary support.

11. REQUIREMENT: LS ADEQUATE: 0 LS SUBSTANDARD: LS

PROJECT: C-17 utilities and roads. (New Mission)

REQUIREMENT: Adequate roadways and traffic control to permit safe and efficient traffic

1. COMPONENT	FY 2005 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
AIR FORCE	(computer generated)	

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
TRAVIS AIR FORCE BASE, CALIFORNIA	C-17 UTILITIES/ROADS/LAND ACQUISITION

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
41130	851-147	XDAT043012	12,844

flow through the base to support the increased traffic flow of heavy construction equipment associated with the C-17 beddown. Adequate roadways include curbing, storm drainage and roadway lighting. Adequate utilities (electrical, gas, and water distribution lines). Includes communications support, demo of pipes and pavement with site improvements. Includes an upgraded sub-station and utilities to beddown C-17 facilities. Construct a gate at the beddown area to include approximately 12.5 acres of land acquisition.

CURRENT SITUATION: The C-17 beddown construction will construct or renovate several facilities and demolish some existing and substandard facilities and pavements. The existing roadway will need to be relocated to accommodate this construction. In addition, curbs, adequate lighting, and proper drainage need to be included. The electrical, water and gas lines run under current roadway and will need to be relocated. Repairs to utilities are necessary to complete the C-17 beddown.

IMPACT IF NOT PROVIDED: Existing roadways are in location of site of new construction and must be relocated. Required traffic flow and vehicle accessibility will be impaired or not available to support C-17 mission requirements. Additionally, new facilities and improvements will be without adequate infrastructure to support the new C-17 requirements. Utilities will need to be relocated/upgraded in support of the beddown site. If new gate is not constructed, delays at construction site in receiving materials required for construction will occur, resulting in the extension of construction timelines which could affect aircraft delivery schedule.

ADDITIONAL: This project meets the criteria/scope specified in Air Force Handbook 32-1084 "Facility Requirements." A preliminary analysis of reasonable options for accomplishing this project (status quo, renovation, upgrade/removal, new construction, leasing) was done. It indicates there is only one option that will meet operational requirements. Because of this, a full economic analysis was not performed. A certificate of exception has been prepared. BASE CIVIL ENGINEER: Lt Col Patrick J Smith, (707) 424-2492.

JOINT USE CERTIFICATION: This is an installation utility/infrastructure project, and does not qualify for joint use at this location. However, all tenants on this installation are benefited by this project.

1. COMPONENT	FY 2005 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
AIR FORCE	(computer generated)	

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
TRAVIS AIR FORCE BASE, CALIFORNIA	C-17 UTILITIES/ROADS/LAND ACQUISITION

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
41130	851-147	XDAT043012	12,944

12. SUPPLEMENTAL DATA:

a. Estimated Design Data:

(1) Status:	
(a) Date Design Started	01-MAR-03
(b) Parametric Cost Estimates used to develop costs	YES
* (c) Percent Complete as of 01 JAN 2004	15%
* (d) Date 35% Designed	15-SEP-03
(e) Date Design Complete	30-SEP-04
(f) Energy Study/Life-Cycle analysis was/will be performed	NO
(2) Basis:	
(a) Standard or Definitive Design -	NO
(b) Where Design Was Most Recently Used -	
(3) Total Cost (c) = (a) + (b) or (d) + (e):	($000)
(a) Production of Plans and Specifications	771
(b) All Other Design Costs	385
(c) Total	1,156
(d) Contract	963
(e) In-house	193
(4) Construction Contract Award	04 DEC
(5) Construction Start	05 JAN
(6) Construction Completion	06 MAR

* Indicates completion of Project Definition with Parametric Cost Estimate which is comparable to traditional 35% design to ensure valid scope, cost and executability.

b. Equipment associated with this project provided from other appropriations:
N/A

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND (AMC)

11 JUL 2003

MEMORANDUM FOR HQ U.S. ARMY CORPS OF ENGINEERS/CERE-M-D
441 G Street, NW
Washington DC 20314-1000

FROM: HQ AMC/CEP
507 Symington Drive
Scott AFB IL 62225-5022

SUBJECT: Request for Fair Market Value Appraisal to Acquire Land for a Gatehouse, Road, and Utilities at Travis AFB CA

1. Please direct the Sacramento District Corps to prepare a real estate appraisal to support the acquisition of 12.5 acres of land for construction of a new gatehouse and associated utilities at Travis AFB CA. This will be a fee acquisition. Request letter from the 60 CES/CD is at attachment 1. Also, please direct the Sacramento District Corps to discontinue persuing the five-acre quantity distance (QD) easement (Tract 611E) in this same area.

2. This project is part of the C-17 military construction (MILCON) beddown at Travis AFB. Fee acquisition is necessary to ensure the south gate construction is out of the QD explosive zone. A DD Form 1391 is provided at attachment 2. This property is located off of Travis proper, west of the Suisun Gate, south of Scandia Road and consists of approximately 12.5 acres, which is at attachment 3. The current owners are Mr. & Mrs. Billy Maher. Property information is at attachment 4.

3. Also, this appraisal is to be funded though AFRPA. Approval for this appraisal, by e-mail, is at attachment 5. For any funding over and above the appraisal, please contact our POC for a fund cite.

4. If the members of your staff have any questions, please have them contact our POC, Deb Kehrer, (618) 229-0777, e-mail address, debra.kehrer@scott.af.mil.

Karen R. Etheridge

KAREN R. ETHERIDGE, GM-13, DAFC
Deputy Chief, Planning and Programming Division
Directorate of Civil Engineering

Attachments:
1. 60 CES/CD Memo, 24 Mar 03
2. DD Form 1391
3. Map
4. Property Information
5. AFRPA Approval

cc:
60 CES/CERR
Corps of Engineers, Sacramento District

DEPARTMENT OF THE AIR FORCE
60TH CIVIL ENGINEER SQUADRON (AMC)

Need from John
Maps

MAR 2 4 2003

MEMORANDUM FOR HQ AMC/CEP
ATTN: J. Deckard
507 Symington Drive
Scott AFB IL 62225-5022

FROM: 60 CES/CD
191 W Street
Travis AFB CA 94535

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2. The acquisition of this property is needed as part of the C-17 program at Travis AFB. Areas of concern regarding QD zones, force protection and fence setback have been considered and incorporated. The new gatehouse and BITC facilities will be located outside of any QD zones.

3. If you have any questions, please contact Yvonne Bush, Real Property, DSN 837-4362, or Vee Kaufman, Engineering, DSN 837-0897.

JOHN I. SCHOPF, GM-14, DAF
Deputy Base Civil Engineer

Attachment:
Area Map

Map 1

1. COMPONENT	FY 2005 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
AIR FORCE	(computer generated)	

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
TRAVIS AIR FORCE BASE, CALIFORNIA	C-17 UTILITIES/ROAD

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
41130	851-147	XDAT043012	7,700

9. COST ESTIMATES

ITEM	U/M	QUANTITY	UNIT	COST
C-17 FACILITIES/UTILITIES/ROADS	LS			6,200
SOUTH GATE IMPROVEMENTS	LS			(2,786)
ELECTRICAL	LF	1,948	231	(450)
WATER	LF	4,200	43	(181)
SEWER	LS			(10)
NATURAL GAS	LF	4,200	50	(210)
COMMUNICATIONS	LF	5,900	98	(578)
PAVEMENTS	SY	49,625	40	(1,985)
SUPPORTING FACILITIES				375
MOBILIZATION	LS			(50)
DEMOLITION	LS			(10)
LAND ACQUISITION (12.5 ACRES)	LS			(315)
SUBTOTAL				6,575
CONTINGENCY (10.0 %)				657
TOTAL CONTRACT COST				7,232
SUPERVISION, INSPECTION AND OVERHEAD (6.0 %)				434
TOTAL REQUEST				7,666
TOTAL REQUEST (ROUNDED)				7,700

10. Description of Proposed Construction: Construct gate at beddown area, including approximately 12.5 acres land acquisition. Any other work associated with project.

11. REQUIREMENT: ADEQUATE: SUBSTANDARD:

PROJECT: C-17 roads and utilities. (New Mission)

REQUIREMENT: Adequate roadways and traffic control to permit safe and efficient traffic flow through the base to support the increased traffic flow of heavy construction equipment associated with the C-17 beddown. Adequate roadways include curbing, storm drainage and roadway lighting. Adequate utilities (electrical, gas, and water distribution lines). Includes communications support, demo of pipes and pavement with site improvements. Includes update sub-station, utilities and environmental to beddown facilities. Construct a gate at the beddown area to include approximately 12.5 acres of land acquisition. Repair roads after construction.

CURRENT SITUATION: The C-17 beddown construction will construct or renovate several facilities and demolish some existing and substandard facilities and pavements. The existing roadway will need to be relocated to accommodate this construction. In addition, curbs, adequate lighting, and proper drainage need to be included. The electrical, water and gas lines run under current roadway and will need to be relocated. Repairs to utilities are necessary to complete the C-17 beddown.

IMPACT IF NOT PROVIDED: Existing roadways are in location of site of new construction and must be relocated. Required traffic flow and vehicle accessibility will be impaired

1. COMPONENT	FY 2005 MILITARY CONSTRUCTION PROJECT DATA	2. DATE
AIR FORCE	(computer generated)	

3. INSTALLATION AND LOCATION	4. PROJECT TITLE
TRAVIS AIR FORCE BASE, CALIFORNIA	C-17 UTILITIES/ROAD

5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST ($000)
41130	851-147	XDAT043012	7,700

or not available to support C-17 mission requirements. Additionally, new facilities and improvements will be without adequate infrastructure and to support the new C-17 requirements. Utilities will need to be relocated/upgraded in support of the beddown site. If new gate is not constructed, delays at construction site in receiving materials required for construction will occur, resulting in the extension of construction timelines which could affect aircraft delivery schedule.

ADDITIONAL: There is no criteria/scope for this project in Part II of Military Handbook 1190, "Facility Planning and Design Guide." However, this project does meet the criteria/scope specified in Air Force Handbook 32-1084 "Facility Requirements." A preliminary analysis of reasonable options for accomplishing this project (status quo, renovation, upgrade/removal, new construction, leasing) was done. It indicates there is only one option that will meet operational requirements. Because of this, a full economic analysis was not performed. A certificate of exception has been prepared. BASE CIVIL ENGINEER: Lt Col Patrick J Smith, (707) 424-2492.

JOINT USE CERTIFICATION: This is an installation utility/infrastructure project, and does not qualify for joint use at this location. However, all tenants on this installation are benefited by this project.

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AIR FORCE	(computer generated)	

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12. SUPPLEMENTAL DATA:

a. Estimated Design Data:

(1) Status:	
(a) Date Design Started	01-OCT-02
(b) Parametric Cost Estimates used to develop costs	YES
* (c) Percent Complete as of 01 JAN 2004	35%
* (d) Date 35% Designed	30-DEC-02
(e) Date Design Complete	30-JUN-03
(f) Energy Study/Life-Cycle analysis was/will be performed	NO
(2) Basis:	
(a) Standard or Definitive Design -	NO
(b) Where Design Was Most Recently Used -	
(3) Total Cost (c) = (a) + (b) or (d) + (e):	($000)
(a) Production of Plans and Specifications	1,200
(b) All Other Design Costs	800
(c) Total	2,000
(d) Contract	1,700
(e) In-house	300
(4) Construction Contract Award	03 DEC
(5) Construction Start	04 APR
(6) Construction Completion	06 JUN

* Indicates completion of Project Definition with Parametric Cost Estimate which is comparable to traditional 35% design to ensure valid scope, cost and executability.

b. Equipment associated with this project provided from other appropriations:
N/A